符 号 说 明

1. 凡数据后有符号“*”，表示光栏位置或其值间有光栏。

凡数据后有符号“* *”，表示原资料中未给此值，此系编者在计算时给定的值。

2. 在主要参数表中，当 d 值是可变的，则用符号“* * *”表示。

3. 在主要参数表中，当半径 r 值后有符号“†”，表示该面为非球面。

4. 凡没有注明数值单位的，均以毫米为单位；若注明以英寸为单位，则在该镜头资料中均以英寸为单位。

5. 常用符号：

ΣS_1	球差系数和；
ΣS_2	彗差系数和；
ΣS_3	象散系数和；
ΣS_4	场曲系数和；
ΣS_5	畸变系数和；
LA'	球差；
$\Delta H'$	绝对畸变；
x_t'	细光束子午场曲；
x_s'	细光束弧矢场曲；
$x_t'-x_s'$	象散；
K_{T1}'	全口径的子午彗差；
$K_{T0.7}$	0.707口径的子午彗差；
QP	相对畸变；
HI	理想象高；
E.F.L	焦距；
B.F.L	后截距；
FNo.	相对孔径倒数；
F.A.	视场角；
L_P'	入瞳距离或光栏距L_P'下标所示面的距离；
η	物高；
ω	镜头视场；
x_1	非球面半径r†值。

8810204

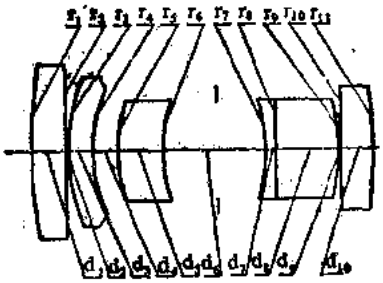
PDF 文件以 "PDF 制作工厂" 试用版创建 http://www.fineprint.com

VISIT…

编号：09-00-001

大孔径准广角物镜

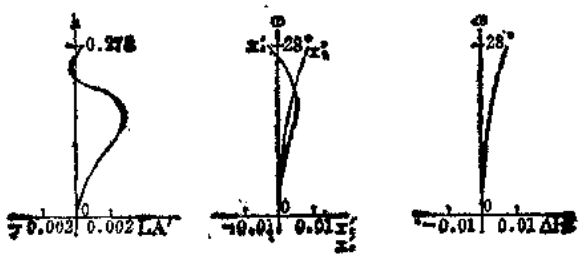
E.F.L.=1　　B.F.L=0.8484　　FNo.=1.8　　F.A.=±28°

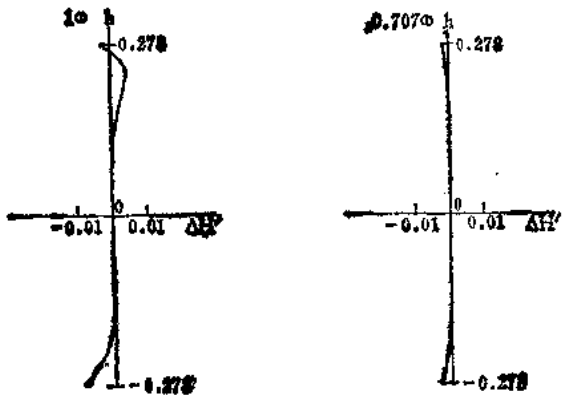


序号	r	d	n	v
1	0.9951	0.0725	1.71300	53.9
2	3.9769	0.0024		
3	0.4274	0.0483	1.58444	40.7
4	0.2873	0.0531		
5	0.3052	0.0966	1.67003	47.3
6	0.3126	0.2029*		
7	−0.3341	0.0217	1.75520	27.5
8	38.9089	0.1329	1.67790	55.3
9	−0.3966	0.0024		
10	11.2319	0.0725	1.88300	40.8
11	−0.9167			

0.2029* = 0.1010 + 0.1019

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.00231	0.00008	−0.00093	0.00453	0.00540	0.53	1.43%
h或ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
100	0.00035	0.0076	0.0081	−0.0034	0.0115	0.00579	−0.00004
100	0.00035	0.0076	0.0081	−0.0034	0.0115	0.00579	−0.00004
70	0.00266	0.0027	0.0032	0.0048	−0.0016	0.01772	0.00010



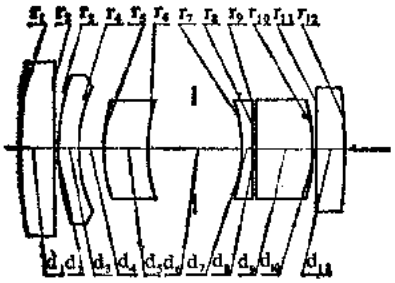


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-00-002

大孔径准广角物镜

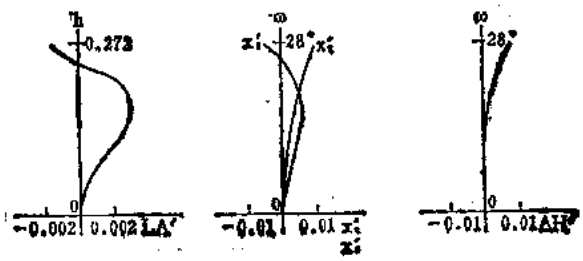
E.F.L=1　　B.F.L=0.8431　　FNo.=1.84　　F.A.=±28°

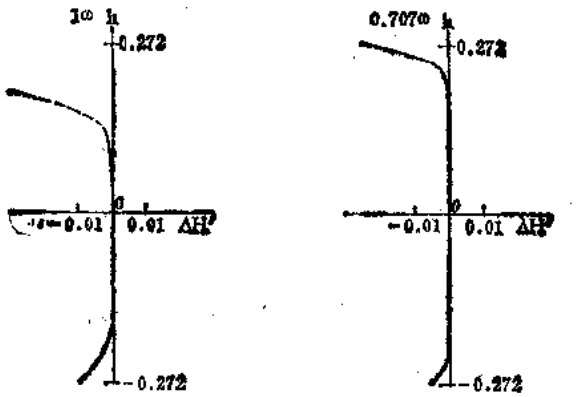


序号	r	d	n	v
1	0.9841	0.0700	1.71300	53.9
2	3.8830	0.0024		
3	0.4285	0.0459	1.57845	41.5
4	0.2865	0.0483		
5	0.3048	0.0954	1.67003	47.3
6	0.3198	0.1981*		
7	−0.3290	0.0205	1.76180	27.1
8	11.5942	0.0024		
9	24.1546	0.1292	1.71300	53.9
10	−0.3871	0.0024		
11	5.6763	0.0628	1.83400	37.2
12	−1.0360			

0.1981* = 0.0990 + 0.0991

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.00208	0.00018	−0.00072	0.00446	0.00467	0.53	1.42%
h或ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}	$K_{T0.7}$
100	−0.00175	0.0075	0.0096	−0.0042	0.0138	0.40984	0.41730
70	0.00301	0.0025	0.0043	0.0053	−0.0010	0.01589	0.00926



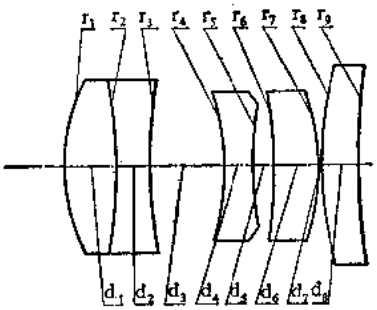


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-00-003

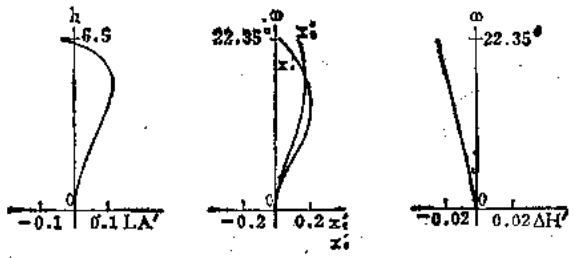
前光栏大孔径照相物镜

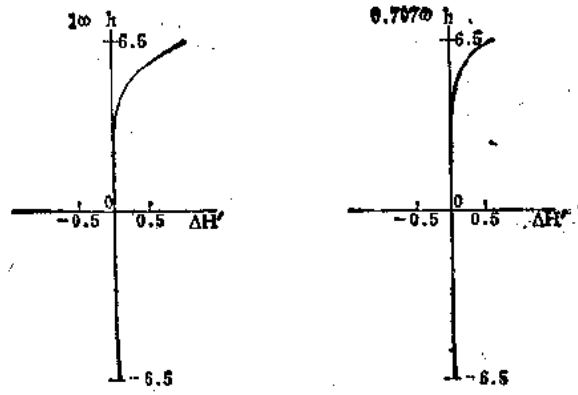
E.F.L=26　B.F.L=17.56　FNo.=2　F.A.=±22.35°　$L^*_{P0}=-1.6$



序号	r	d	n	ν
1	15.445	3.00	1.77250	49.6
2	−44.635	1.85	1.64769	33.8
3	45.846	4.23		
4	−15.233	1.63	1.68893	31.1
5	21.470	1.20		
6	−33.113	2.73	1.77250	49.6
7	−12.196	0.15		
8	20.022	2.10	1.77250	49.6
9	66.210			

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.04986	0.03119	−0.00553	0.08982	−0.02568	10.66	−0.22%
h或ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
100	−0.0345	−0.024	0.145	0.009	0.136	−0.6700	−0.0927
70	0.1233	−0.018	0.158	0.192	−0.034	−0.3380	−0.0366



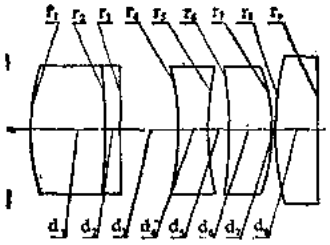


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-00-004

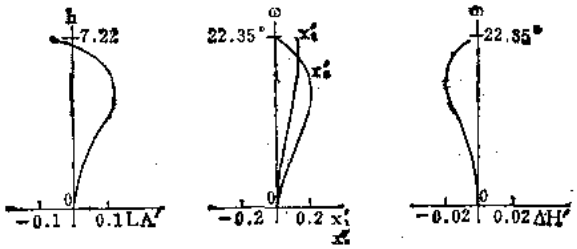
前光栏大孔径照相物镜

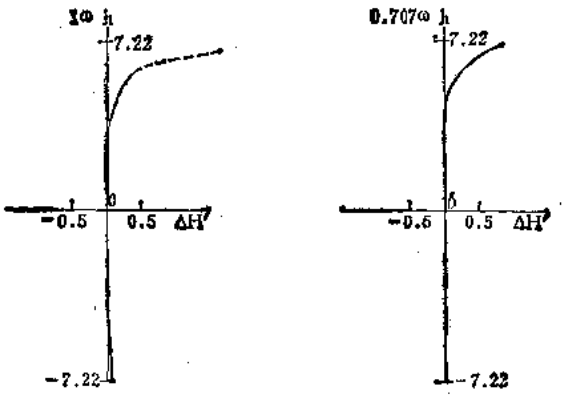
E.F.L=26　B.F.L=16.55　FNo.=1.8　F.A.=±22.35°　$L^*_{P_0}=-1.6$



序号	r	d	n	v
1	16.333	5.00	1.7859	44.2
2	-43.284	1.00	1.7552	27.5
3	123.054	3.88		
4	-18.019	1.97	1.7552	27.5
5	20.840	1.40		
6	-26.607	3.10	1.7725	49.6
7	-12.558	0.10		
8	21.232	3.00	1.7859	44.2
9	119.791			

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	0.06325	0.03952	-0.01947	0.12794	-0.03665	10.68	-0.02%
h 或 ω %	LA′	ΔH′	x_1'	x_2'	$x_1'-x_2'$	K_{f_1}	$K_{f_{0.7}}$
100	-0.0625	-0.003	0.135	0.010	0.125	-10.667	-0.122
70	0.1259	-0.019	0.117	0.204	-0.087	-0.439	-0.049
70	0.1259	-0.019	0.117	0.204	-0.087	-0.439	-0.049



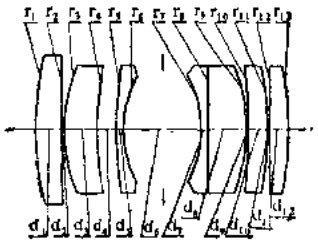


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-00-005

大 孔 径 照 相 物 镜

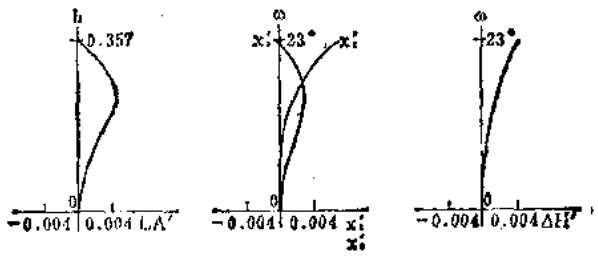
E.F.L=1　　B.F.L=0.7336　　FNo.=1.4　　F.A.=±23°

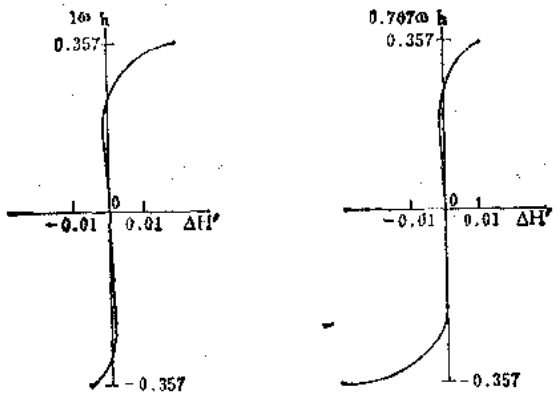


序号	r	d	n	v
1	1.0116	0.0786	1.77250	49.6
2	9.3832	0.0020		
3	0.5034	0.1005	1.76200	40.3
4	0.8991	0.0623		
5	1.3757	0.0241	1.75520	27.5
6	0.3554	0.2492*		
7	−0.3375	0.0261	1.69895	30.1
8	19.2887	0.1286	1.80420	46.5
9	−0.5407	0.0020		
10	−2.4565	0.0542	1.75700	47.8
11	−0.9524	0.0020		
12	∞	0.0643	1.75700	47.8
13	−0.9600			

0.2492* = 0.1250 + 0.1242

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	0.004641	−0.000006	−0.001054	0.004525	0.004650	0.42	0.97%
h 或 ω %	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{F1}	$K_{T0.7}$
h 或 ω %	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{F1}	$K_{T0.7}$
100	−0.0004	0.0041	0.0068	−0.0005	0.0073	−0.0070	−0.0010
70	0.0046	0.0018	0.0016	0.0031	−0.0015	0.0116	0.0005



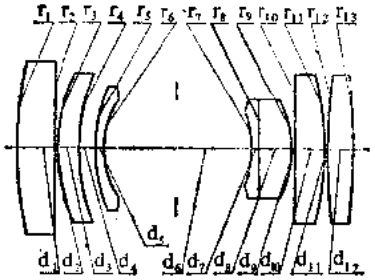


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-00-006

后截距大的变形高斯型大孔径广角物镜

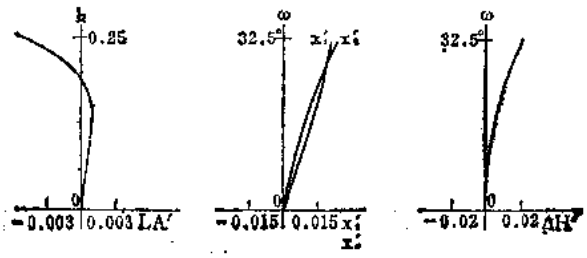
E.F.L＝1　　B.F.L＝1.047　　FNo.＝2　　F.A.＝±32.5°

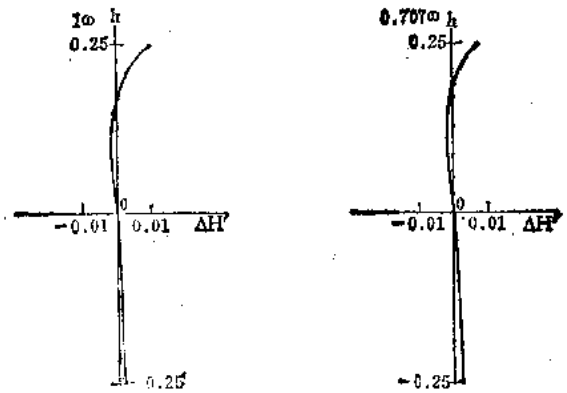


序号	r	d	n	v
1	1.4972	0.149	1.62230	53.2
2	6.4897	0.009		
3	0.6472	0.093	1.70154	41.3
4	0.7666	0.077		
5	0.6391	0.026	1.58313	59.4
6	0.3293	0.605*		
7	－0.4114	0.026	1.75520	27.7
8	7.1056	0.144	1.69350	53.3
9	－0.4421	0.009		
10	－6.2511	0.127	1.80610	41.0
11	－1.2030	0.009		
12	2.4811	0.100	1.69350	53.3
13	－3.9006			

0.605* = 0.303 + 0.302

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	0.00074	0.00088	－0.00049	0.00533	0.01826	0.64	3.3%
h或ω%	LA′	ΔH′	x_i	x_i'	$x_i'-x_i$	K_{f1}	$K_{f0.7}$
---	---	---	---	---	---	---	---
100	－0.0063	0.021	0.0248	0.0232	0.0016	－0.00641	－0.00154
70	0.0009	0.009	0.0142	0.0148	－0.0006	－0.00426	－0.00018



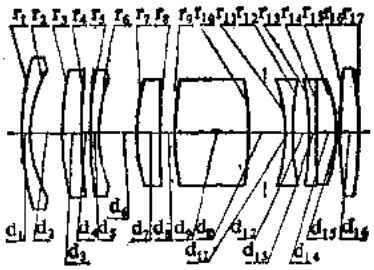


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-00-007

小型反远距型大孔径广角物镜

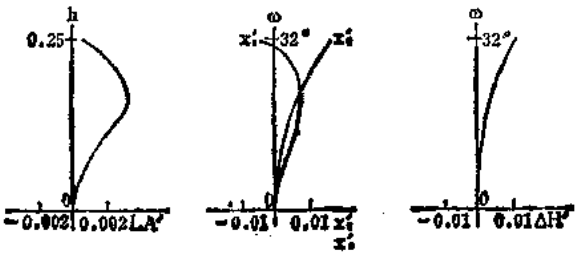
E.F.L＝1　　B.F.L＝1.071　　FNo.＝2　　F.A.＝±32°

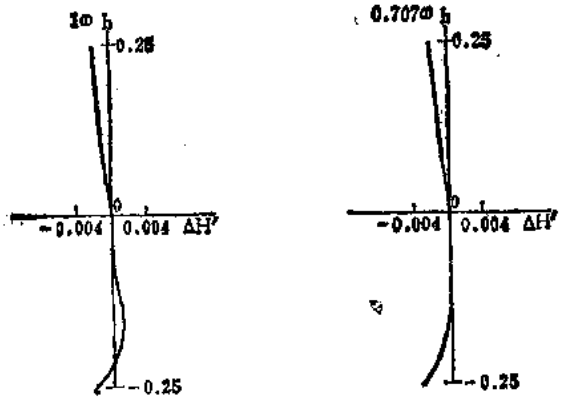


序号	r	d	n	ν
1	1.3460	0.04225	1.53172	48.9
2	0.6071	0.15260		
3	1.4554	0.08113	1.60311	60.7
4	3.3858	0.04504		
5	3.9681	0.04225	1.53172	48.9
6	0.6733	0.19674		
7	0.9139	0.11239	1.80610	40.8
8	－68.3270	0.06748		
9	3.0540	0.36400	1.60311	60.7
10	－1.2822	0.17048*		
11	－0.7006	0.02817	1.68893	31.1
12	1.4021	0.09155		
13	－1.1647	0.02817	1.80518	25.4
14	19.2187	0.10704	1.77250	49.6
15	－0.6484	0.00563		
16	2.7661	0.08732	1.77250	49.6
17	－1.5319			

0.17048* = 0.07048 + 0.10000

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	0.00149	－0.00016	－0.00065	0.00425	0.00963	0.62	1.8%
h 或 ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K'_{T1}	$K'_{T0.7}$
100	0.0006	0.011	0.0160	－0.0054	0.0214	0.00160	0.00008
70	0.0032	0.004	0.0057	0.0064	－0.0007	0.00269	0.00078



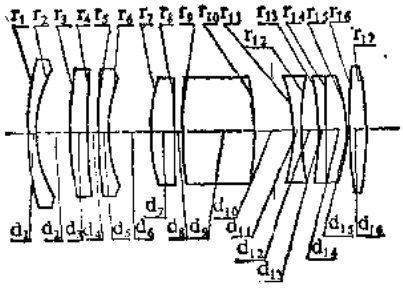


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号: 09-00-008

小型反远距型大孔径广角物镜

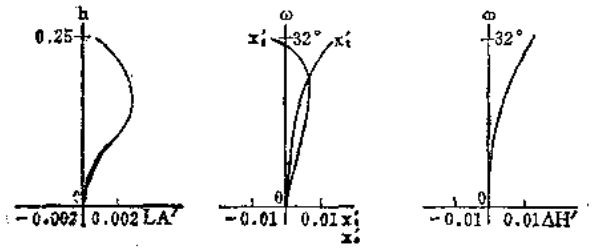
E.F.L=1　　B.F.L=1.076　　FNo.=2　　F.A.=±32°

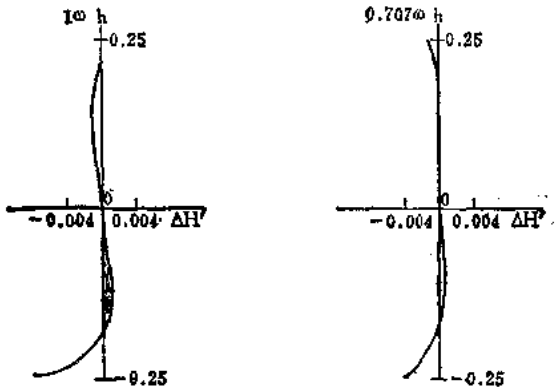


序号	r	d	n	v
1	1.2921	0.04225	1.53358	51.6
2	0.5936	0.16669		
3	1.3565	0.08963	1.60311	60.7
4	3.7704	0.04505		
5	3.5002	0.04225	1.57135	52.9
6	0.6748	0.19698		
7	0.9164	0.11279	1.80610	40.8
8	9.4168	0.03365		
9	2.3250	0.34646	1.60311	60.7
10	-1.3224	0.19114*		
11	-0.7468	0.02817	1.68893	31.1
12	1.2915	0.09155		
13	-1.1530	0.02817	1.80518	25.4
14	217.2700	0.09859	1.77250	49.6
15	-0.6570	0.00563		
16	2.6251	0.08732	1.77250	49.6
17	-1.4561			

0.19114* = 0.09114 + 0.10000

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.00141	-0.00039	-0.00087	0.00467	0.00981	0.62	1.9%
h或ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{f1}	$K_{f0.7}$
100	0.0007	0.012	0.0132	-0.0056	0.0188	0.00431	0.00029
70	0.0028	0.004	0.0041	0.0067	-0.0026	0.00293	0.00056



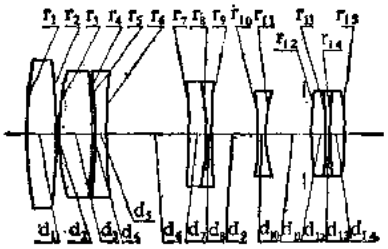


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-00-009

大孔径远摄物镜

E.F.L＝200　　B.F.L＝95.268　　FNo.≈2　　F.A.＝±6.16°

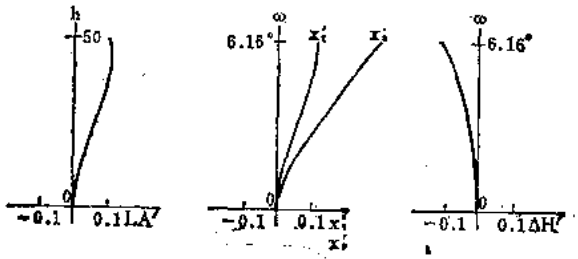


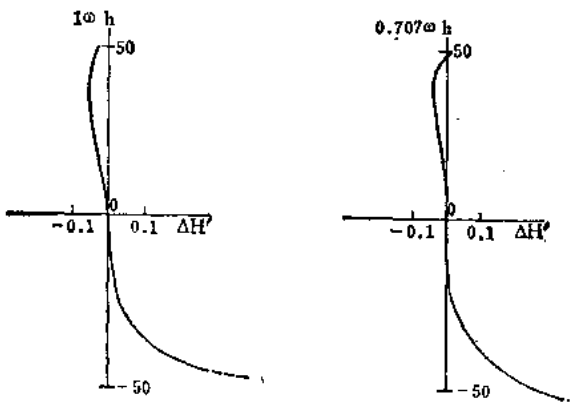
序号	r	d	n	ν
1	207.500	14.000	1.50032	81.9
2	-491.363	0.300		
3	112.869	15.500	1.50032	81.9
4	-610.000	0.650		
5	-483.000	5.000	1.75520	27.5
6	432.252	40.673		
7	-393.000	7.500	1.79504	28.4
8	-125.000	2.600	1.46450	65.8
9	330.000	21.500		
10	-161.181	8.400	1.46450	65.8
11	64.939	22.201*		
12	138.500	7.000	1.69680	55.6
13	-184.000	2.000	1.69895	30.0
14	184.000	7.000	1.69680	55.6
15	-132.984			

22.201* = 19.000 + 3.201

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.0328	0.0075	-0.0091	0.0585	-0.0714	21.58	-0.6%
h或ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
100	0.1038	-0.135	0.120	0.325	-0.205	-0.314	-0.025
70	0.0982	-0.048	0.094	0.180	-0.086	-0.194	-0.019

注：β＝0.1*时，d_8＝57.673；d_{11}＝5.201。



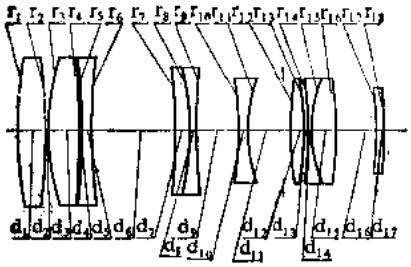


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-00-010

大 孔 径 远 摄 物 镜

E.F.L＝200　　B.F.L＝63.596　　FNo.＝2　　F.A.＝±6.16°

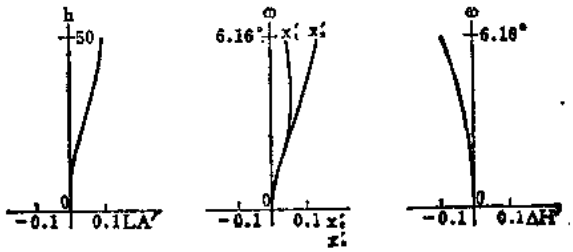


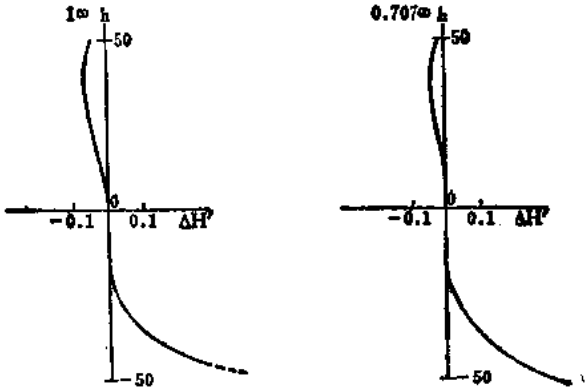
序号	r	d	n	ν
1	200.000	14.000	1.50032	81.9
2	－540.000	0.300		
3	112.869	15.500	1.50032	81.9
4	－600.000	0.650		
5	－480.000	5.000	1.75520	27.5
6	431.735	41.201		
7	－386.000	7.500	1.79504	28.4
8	－125.000	2.600	1.46450	65.8
9	286.185	21.500		
10	－161.181	3.400	1.46450	65.8
11	67.815	22.912*		
12	171.000	6.500	1.69350	53.6
13	－131.975	2.000		
14	－213.000	2.000	1.59507	35.6
15	61.000	11.000	1.69680	55.6
16	－193.237	22.000		
17	－130.006	3.000	1.46450	65.8
18	－311.705			

22.912*＝19.000＋3.912

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.0242	0.0097	－0.0021	0.0312	－0.0513	21.58	－0.4%
h或ω%	LA′	ΔH′	x_i'	x_s'	$x_i'-x_s'$	K_{T1}	$K_{T0.7}$
100	0.1009	－0.091	0.053	0.151	－0.098	－0.361	－0.031
70	0.0771	－0.034	0.062	0.095	－0.033	－0.216	－0.021

注：β＝0.1*时，d_8＝58.201；d_{11}＝5.912。



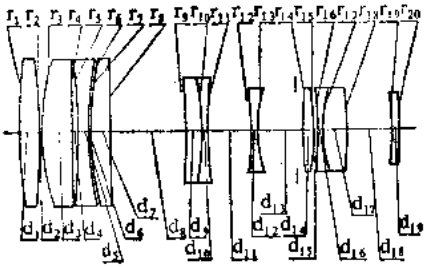


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-00-011

大 孔 径 远 摄 物 镜

E.F.L=200　　B.F.L=63.454　　FNo.=2　　F.A.=±6.16°

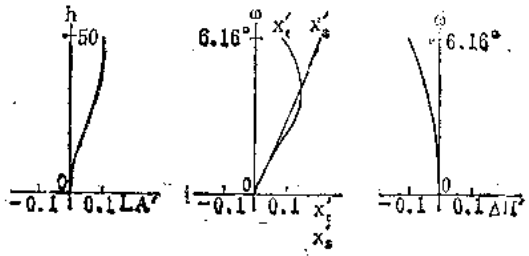


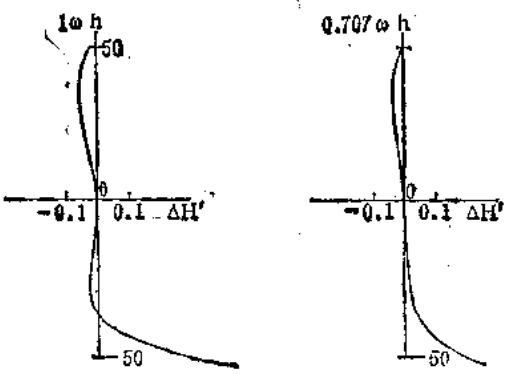
序号	r	d	n	ν
1	380.000	10.500	1.62041	60.3
2	−628.000	0.300		
3	115.000	15.500	1.50032	81.9
4	−939.000	1.800		
5	−498.693	5.000	1.75692	31.7
6	230.784	1.000		
7	175.000	11.000	1.50032	81.9
8	5631.099	36.739		
9	−384.000	7.500	1.79504	28.4
10	−127.000	2.600	1.46450	65.8
11	269.000	21.400		
12	−164.945	3.400	1.46450	65.8
13	69.014	21.791*		
14	170.000	6.500	1.69350	53.6
15	−131.700	2.000		
16	−205.621	2.000	1.59507	35.6
17	64.200	11.000	1.69680	55.6
18	−194.100	22.000		
19	−127.991	3.000	1.46450	65.8
20	−258.054			

21.791* = 19.000 + 2.791

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	0.0315	−0.0070	0.0077	0.0373	−0.0646	21.54	−0.5%
	0.0315	−0.0070	0.0077	0.0373	−0.0646	21.54	−0.5%

h 或 ω %	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{f_1}'	$K_{T0.7}'$
100	0.1192	−0.109	0.086	0.230	−0.144	−0.245	0.035
70	0.0965	−0.041	0.145	0.147	−0.002	−0.138	−0.006



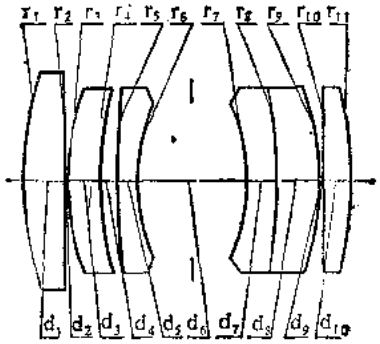


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号: 09-00-012

照 相 物 镜

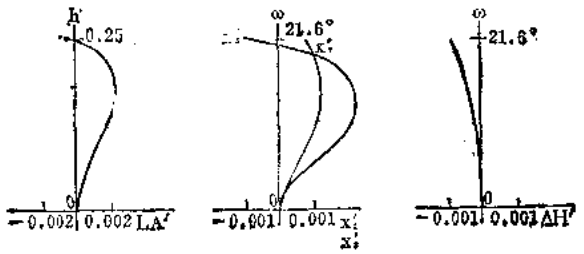
E.F.L=1　　B.F.L=0.747　　FNo.=2　　F.A.=±21.6°

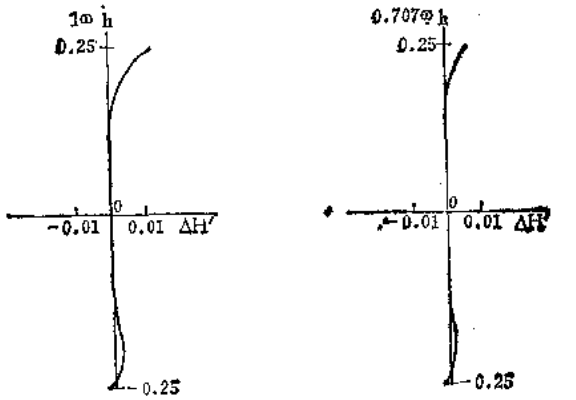


序号	r	d	n	ν
1	0.560	0.066	1.78590	44.10
2	4.829	0.002		
3	0.391	0.055	1.78590	44.10
4	0.557	0.026		
5	1.434	0.031	1.78470	26.22
6	0.301	0.175*		
7	-0.326	0.051	1.64769	33.80
8	-0.818	0.073	1.77250	49.60
9	-0.462	0.002		
10	22.701	0.039	1.69100	54.84
11	-0.677			

0.1750* = 0.0875 + 0.0875

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.00109	0.00047	-0.00034	0.00179	-0.00037	0.39	-0.2%
h或ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{f1}	$K_{f0.7}$
h或ω%	LA	ΔH	x_t	x_s	x_t-x_s	K_{f1}	$K_{f0.7}$
100	0.00002	-0.0009	0.00086	-0.00092	0.00178	-0.00560	-0.00152
70	0.00249	-0.0002	0.00131	0.00268	-0.00137	-0.00204	-0.00039



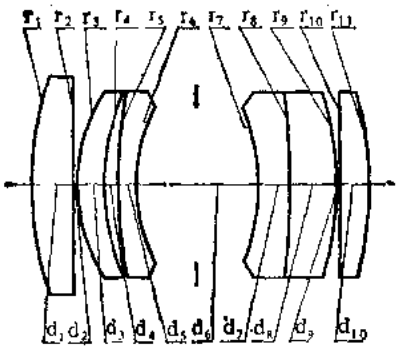


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号: 09-00-013

照 相 物 镜

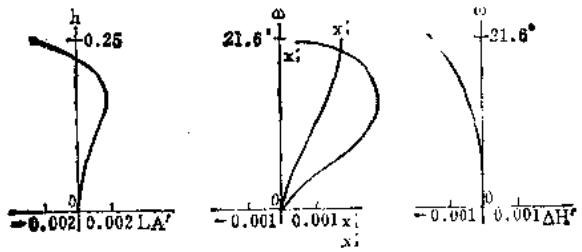
E.F.L=1　　B.F.L=0.739　　FNo.=2　　F.A.=±21.6°

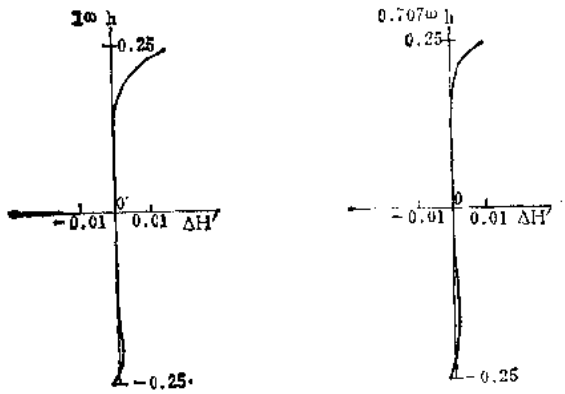


序号	r	d	n	ν
1	0.625	0.066	1.80440	39.62
2	3.580	0.092		
3	0.343	0.053	1.80440	39.62
4	0.512	0.022		
5	0.814	0.031	1.84666	23.90
6	0.277	0.190*		
7	−0.335	0.049	1.68893	31.08
8	−1.518	0.077	1.80610	40.92
9	−0.495	0.002		
10	−5.346	0.042	1.73400	51.52
11	−0.629			

0.190* = 0.095 + 0.095

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.00111	0.00060	−0.00038	0.00174	−0.00064	0.39	−0.4%
h 或 ω %	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{f1}	$K_{f0.7}$
100	−0.0027	−0.0016	0.00179	0.00058	0.00121	−0.00804	−0.00176
100	−0.0027	−0.0016	0.00179	0.00058	0.00121	−0.00804	−0.00176
70	0.0019	−0.0004	0.00141	0.00288	−0.00147	−0.00432	−0.00051



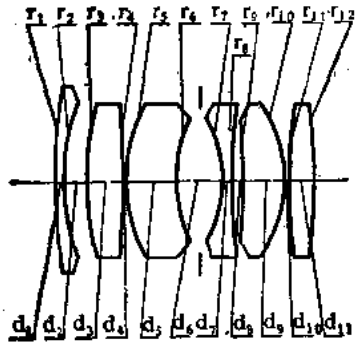


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-00-014

小型大孔径准广角物镜

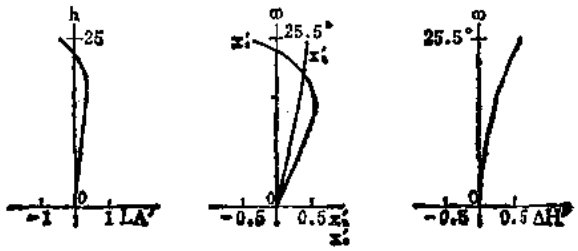
E.F.L＝100　　B.F.L＝83.38　　FNo.＝2　　F.A.＝±25.5°**

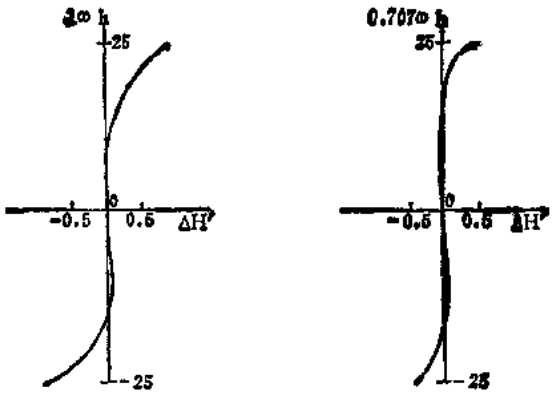


序号	r	d	n	ν
1	172.23	2.61	1.64814	45.8
2	71.59	7.43		
3	96.44	11.27	1.74320	49.4
4	-624.25	0.22		
5	51.04	15.14	1.80610	41.0
6	46.14	14.61*		
7	-40.79	2.59	1.74077	27.8
8	262.65	2.28		
9	-703.22	14.73	1.71300	53.9
10	-44.38	0.22		
11	211.20	8.64	1.73400	51.5
12	-175.54			

14.61* = 7.31 + 7.30

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.1351	-0.0093	-0.0602	0.3461	0.4015	47.7	1.3%
h 或 ω%	LA′	ΔH′	x_1'	x_2'	$x_2'-x_1'$	K_{f_1}	$K_{f_{0.7}}$
100	-0.380	0.634	0.421	-0.335	0.756	0.0244	-0.0518
70	0.307	0.230	0.349	0.526	-0.177	-0.0048	0.0009



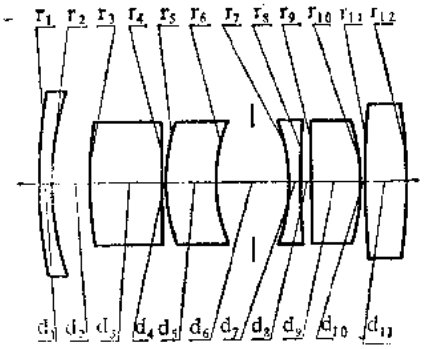


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-00-015

小型大孔径准广角物镜

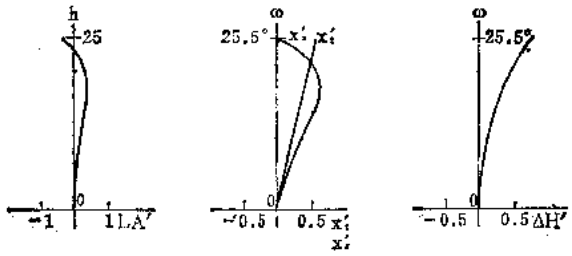
E.F.L=100　　B.F.L=83.02　　FNo.=2　　F.A.=±25.5°**

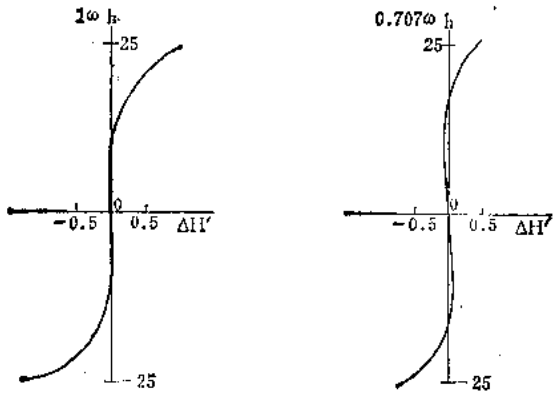


序号	r	d	n	ν
1	101.37	2.61	1.54814	45.8
2	60.65	8.26		
3	93.37	16.59	1.74320	49.4
4	-28123.58	0.22		
5	38.77	10.96	1.78590	44.2
6	83.52	16.38*		
7	-37.92	2.59	1.74077	27.8
8	437.74	2.28		
9	-1438.96	10.92	1.73400	51.5
10	-44.79	0.22		
11	344.81	8.70	1.71300	53.9
12	-108.47			

16.38* = 8.19 + 8.19

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.1273	-0.0122	-0.0448	0.3504	0.4373	47.7	1.8%
h 光线 ω %	LA′	AH′	x_t'	x_s'	$x_t'-x_s'$	K_{f1}	$K_{f0.7}$
100	-0.309	0.878	0.497	-0.017	0.514	0.1599	-0.0099
70	0.282	0.275	0.442	0.615	-0.173	0.1776	0.0099



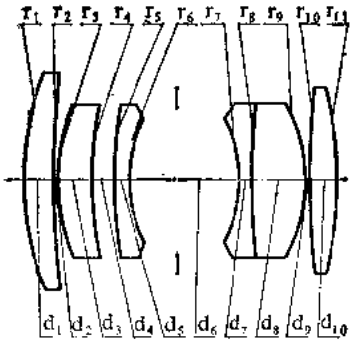


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-00-016

变形高斯型物镜

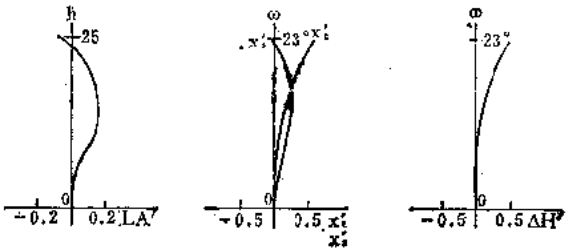
E.F.L=100　　B.F.L=74.06　　FNo.=2　　F.A.=±23°

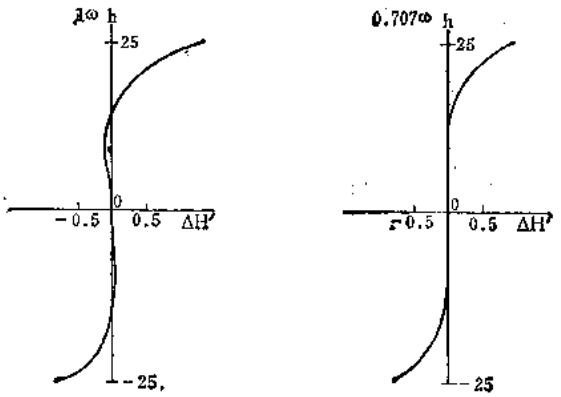


序号	r	d	n	ν
1	61.00	7.4	1.63854	55.4
2	280.62	0.4		
3	43.00	7.3	1.65844	50.9
4	80.56	4.4		
5	105.00	3.6	1.64769	33.8
6	27.46	23.0*		
7	−26.70	2.2	1.63980	34.6
8	160.00	11.2	1.69350	53.3
9	−36.26	0.3		
10	550.00	5.8	1.72000	43.7
11	−79.40			

23.0* = 10.0 + 13.0

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	H	QP(1 ω)
	0.0941	0.0130	−0.0360	0.1765	0.2103	42.47	1.1%
h 或 ω %	LA′	ΔH′	x_1'	x_3'	$x_1'-x_3'$	K_{T1}'	$K_{T0.7}'$
100	−0.085	0.509	0.643	−0.057	0.700	−0.2699	−0.0335
70	0.175	0.150	0.242	0.261	−0.019	0.0144	0.0039



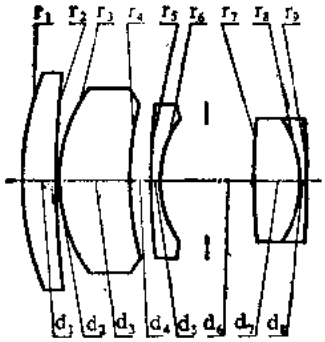


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-00-017

总长短的远摄照相物镜

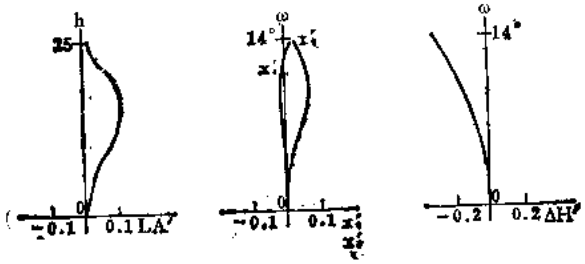
E.F.L=100　　B.F.L=51.75　　FNo.=2　　F.A.=±14°

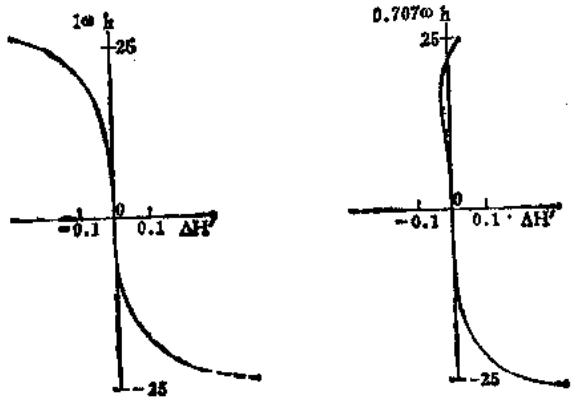


序号	r	d	n	v
1	59.514	7.34	1.7200	50.25
2	387.226	0.18		
3	31.522	12.26	1.6230	58.14
4	64.950	4.10		
5	145.777	1.65	1.7847	25.71
6	21.474	20.05*		
7	174.254	8.94	1.7000	48.08
8	-21.424	1.06	1.5830	59.36
9	-163.873			

20.05* = 9.00 + 11.05

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.0796	0.0060	-0.0190	0.0544	-0.1971	24.9	-1.3%
h 或 ω %	LA'	ΔH'	x_t'	x_s'	$x_t'-x_s'$	K_{f_1}	$K_{f_{0.7}}$
100	0.013	-0.347	0.019	0.031	-0.012	-0.202	-0.0212
100	0.013	-0.347	0.019	0.031	-0.012	-0.202	-0.0212
70	0.122	-0.127	-0.011	0.081	-0.092	-0.198	-0.0107



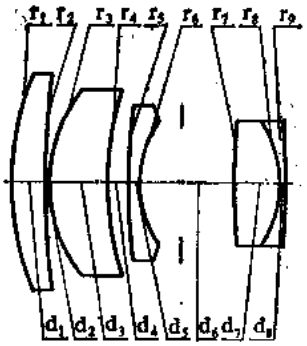


PDF 文件以 "PDF 制作工厂" 试用版创建　　http://www.fineprint.com

编号：09-00-018

总长短的远摄照相物镜

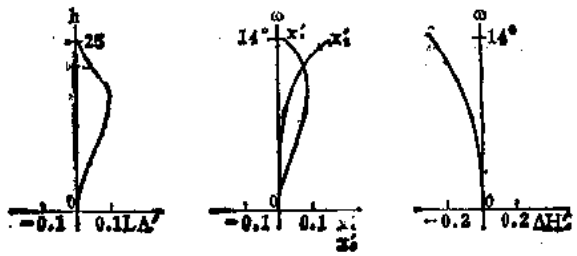
E.F.L=100　　B.F.L=50.25　　FNo.=2　　F.A.=±14°

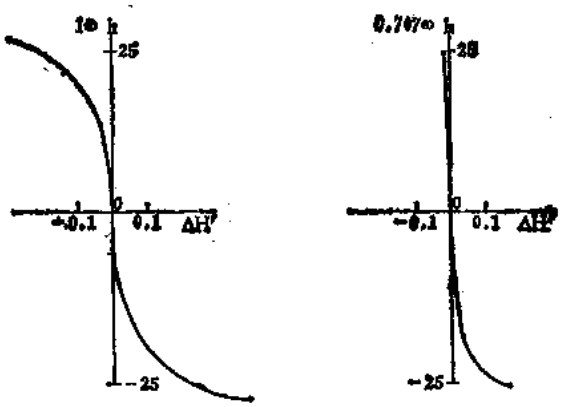


序号	r	d	n	v
1	58.808	7.06	1.71300	53.89
2	347.658	0.18		
3	33.409	14.12	1.61375	56.36
4	68.560	4.12		
5	176.717	1.65	1.78472	25.71
6	22.088	19.44*		
7	133.521	9.18	1.71700	47.94
8	−21.689	1.76	1.60729	59.38
9	−180.560			

19.44* = 9.00 + 10.44

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.0645	0.0002	−0.0156	0.0525	−0.1853	24.9	−1.2%
h或ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{f1}	$K_{f0.7}$
100	0.0099	−0.301	0.142	0.019	0.123	−0.060	0.0008
100	0.0099	−0.301	0.142	0.019	0.123	−0.060	0.0008
70	0.0938	−0.115	0.029	0.081	−0.052	−0.097	−0.0023



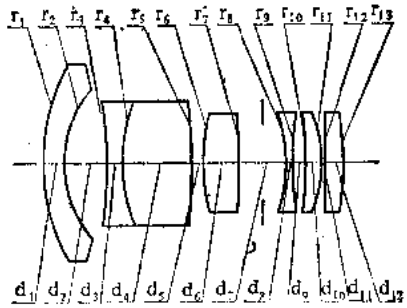


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-02-019

反远距型广角物镜

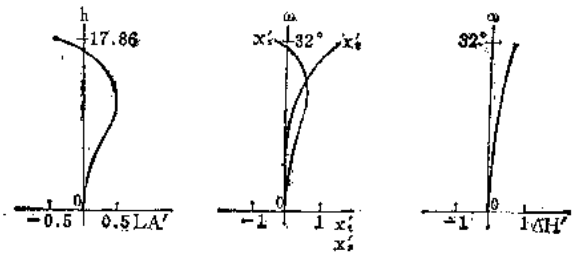
E.F.L＝100　　B.F.L＝108.66　　FNo.＝2.8　　F.A.＝±32°

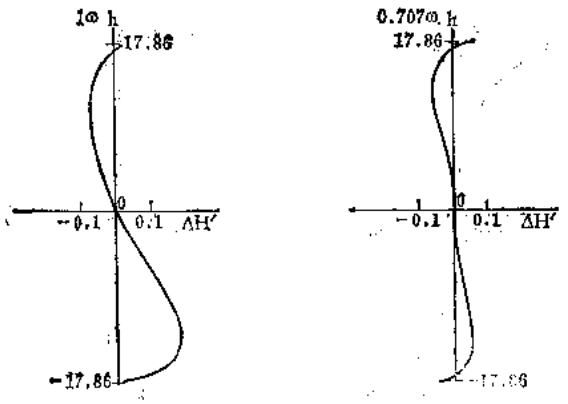


序号	r	d	n	v
1	82.023	7.54	1.59181	58.3
2	42.940	16.90		
3	－173.810	6.06	1.56384	60.8
4	66.144	28.39	1.71300	53.9
5	－341.497	4.18		
6	76.184	13.86	1.69350	53.4
7	－252.589	19.12*		
8	－58.367	2.42	1.71736	29.5
9	128.139	6.74		
10	－168.483	7.66	1.71300	53.9
11	－50.000	0.28		
12	－2929.021	8.22	1.64085	56.8
13	－104.022			

19.12* = 9.56 + 9.56

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.115	0.005	－0.060	0.238	0.589	62.4	1%
h或ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K'_{F1}	$K'_{F0.7}$
100	－0.49	0.64	1.58	－0.53	2.11	－0.020	－0.062
70	0.48	0.35	0.29	0.61	－0.32	－0.010	0.008



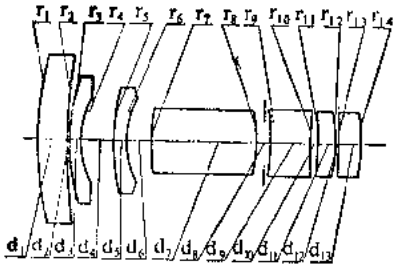


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-02-020

小型反远距型广角物镜

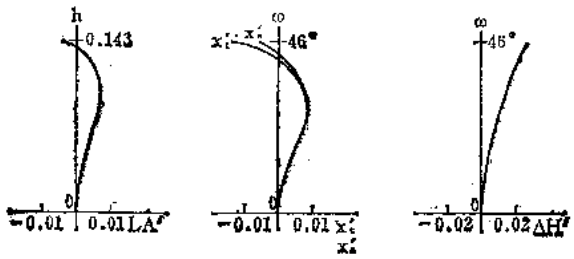
E.F.L=1　　B.F.L=1.733　　FNo.=3.5　　F.A.=±46°

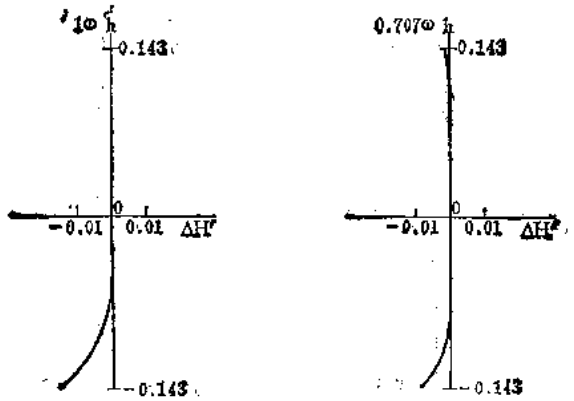


序号	r	d	n	v
1	1.6258	0.1858	1.7200	42.1
2	3.2363	0.0046		
3	0.9243	0.0697	1.6180	63.4
4	0.4107	0.1802		
5	1.0250	0.0697	1.7130	54.0
6	0.4124	0.1263		
7	1.1107	0.6153	1.5955	39.2
8	−0.7086	0.0743*		
9	−1.1192	0.2164	1.8467	23.9
10	3.8385	0.0302		
11	−2.0152	0.0929	1.6180	63.4
12	−0.6649	0.0070		
13	−11.8690	0.1254	1.6180	63.4
14	−0.9824			

0.0743* = 0.0400 + 0.0343

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.0010	−0.0023	0.0048	0.0017	0.0182	1	2.6%
h或ω% / h或ω%	LA' / LA	$\Delta H'$ / ΔH	x_t' / x_t	x_s' / x_s	$x_t'-x_s'$ / x_t-x_s	K_{T1}' / K_{T1}	$K_{f0.7}'$ / $K_{f0.7}$
100	−0.0037	0.027	−0.014	−0.006	−0.008	0.0087	0.0034
70	0.0069	0.016	0.008	0.008	0.000	0.0045	0.0010



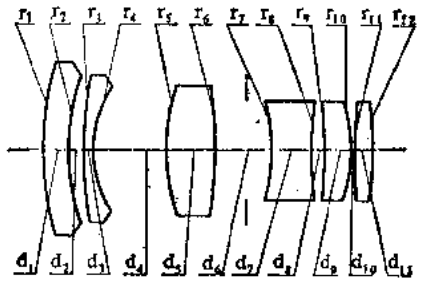


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-02-021

广 角 物 镜

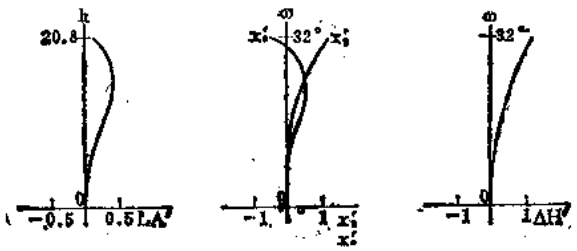
E.F.L=100　　B.F.L=114.9　　FNo.=2.4　　F.A.=±32°

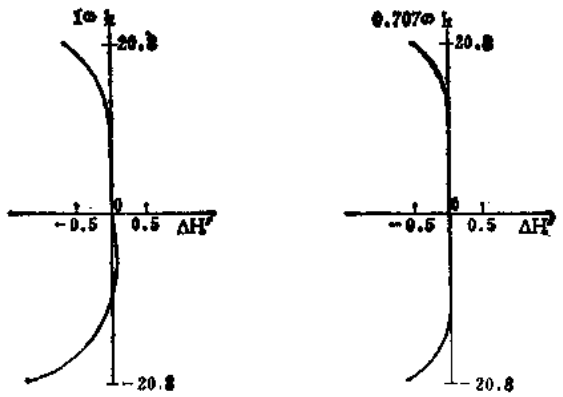


序号	r	d	n	ν
1	120.7	9.1	1.52630	51.1
2	87.9	5.1		
3	160.6	3.4	1.51602	56.8
4	45.7	30.4		
5	80.5	19.4	1.78590	44.2
6	-190.8	23.5*		
7	-73.5	13.8	1.80518	25.4
8	156.8	4.6		
9	-247.2	8.9	1.71300	54.0
10	-58.3	0.3		
11	437.2	8.1	1.73500	49.8
12	-146.4			

23.5* = 12.0 + 11.5

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.123	-0.073	-0.071	0.300	1.009	62.3	1.8%
h 或 ω %	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
100	0.12	1.15	1.22	-0.54	1.76	1.186	0.195
70	0.41	0.54	0.33	0.58	-0.25	0.625	0.064



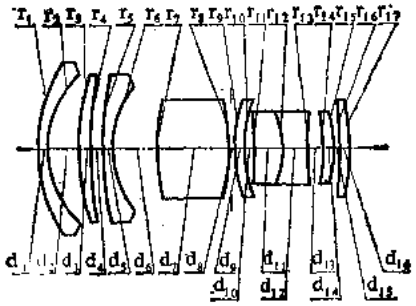


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-02-022

反远距型广角物镜

E.F.L＝100　　B.F.L＝128.49　　FNo.＝4.5　　F.A.＝±42°

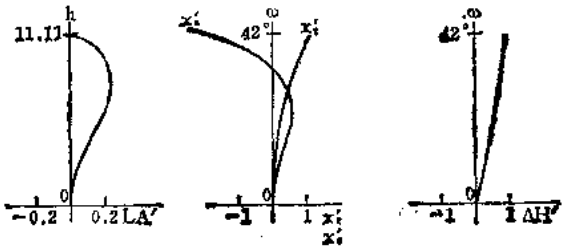


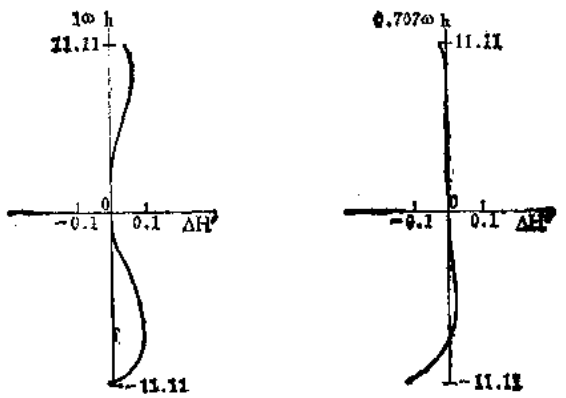
序号	r	d	n	ν
1	65.969	3.13	1.60311	60.7
2	40.040	12.46		
3	97.185	5.33	1.63930	44.9
4	176.428	4.40		
5	138.666	3.73	1.61800	63.4
6	39.661	18.73		
7	87.968	29.93	1.74400	44.7
8	－89.333	2.40*		
9	57.600	3.37	1.80518	25.4
10	53.332	3.76		
11	－328.667	12.23	1.71700	47.9
12	－33.600	10.25	1.75690	31.8
13	119.968	5.12		
14	－78.387	4.40	1.80400	46.6
15	－50.173	0.27		
16	－210.140	4.93	1.73400	51.5
17	－86.021			

2.40* = 1.20 + 1.20

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	0.023	－0.015	－0.024	0.108	1.019	90	0.8%

h 或 ω %	LA′	ΔH′	x_t'	x_s'	$x_t' - x_s'$	K'_{T1}	$K'_{T0.7}$
100	－0.04	0.80	1.20	－2.56	3.76	－0.011	－0.065
70	0.24	0.73	0.42	0.46	－0.04	0.080	－0.001



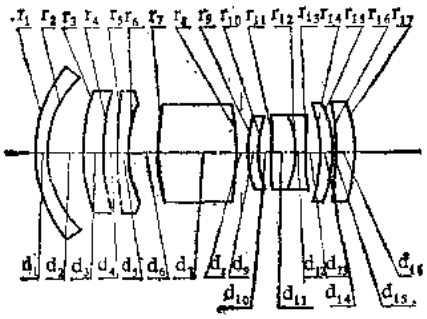


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-02-023

反远距型广角物镜

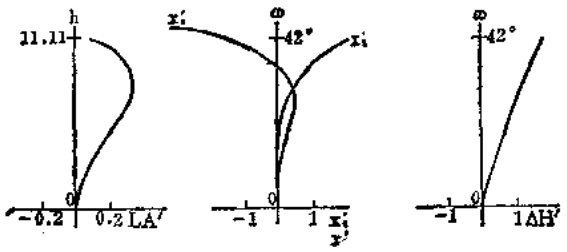
E.F.L=100　　B.F.L=120.35　　FNo.=4.5　　F.A.=±42°

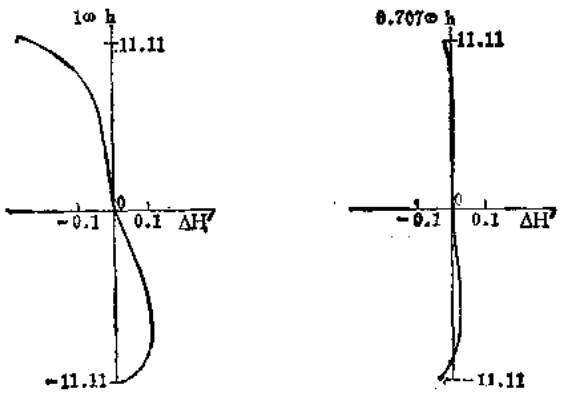


序号	r	d	n	ν
1	49.140	4.00	1.62041	60.3
2	35.408	12.40		
3	68.749	6.67	1.63930	44.9
4	78.945	4.00		
5	187.804	3.73	1.62041	60.3
6	41.381	9.33		
7	84.425	29.93	1.74400	44.7
8	-101.625	3.60*		
9	38.698	3.47	1.74077	27.8
10	38.124	3.47		
11	∞	8.00	1.71700	47.9
12	-29.599	3.13	1.75690	31.8
13	114.068	5.07		
14	-60.843	4.67	1.80400	46.6
15	-49.223	0.13		
16	-110.072	5.33	1.80400	46.6
17	-53.462			

3.60* = 1.80 + 1.80

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.028	-0.015	-0.043	0.137	1.365	90	2%
h或ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	Kf_1	$Kf_{0.7}$
h或ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	Kf_1	$Kf_{0.7}$
100	0.11	1.88	2.17	-3.50	5.68	0.140	-0.029
70	0.34	1.06	0.28	0.46	-0.18	0.040	-0.011



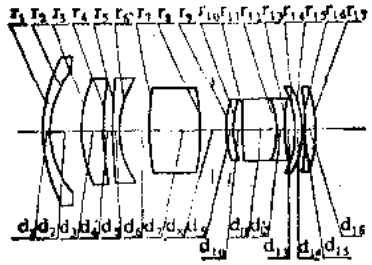


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-02-024

反 远 距 型 广 角 物 镜

E.F.L=99.83　　B.F.L=114.64　　FNo.=4.5　　F.A.=±42°

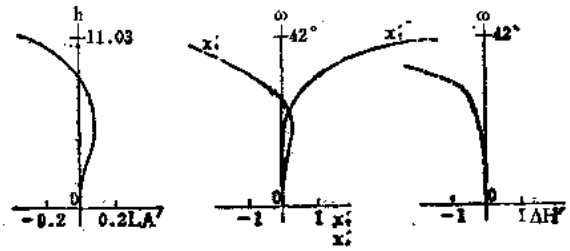


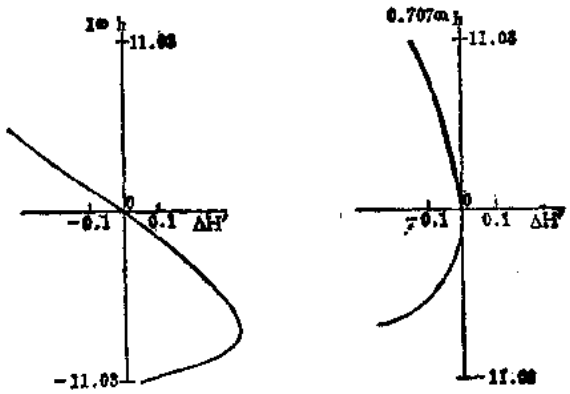
序号	r	d	n	ν
1	71.59	3.20	1.62041	60.3
2	42.25	15.33		
3	59.46	9.33	1.58913	61.1
4	146.67	2.93		
5	373.03	2.67	1.62041	60.3
6	41.29	13.33		
7	131.90	22.27	1.74400	44.7
8	−95.29	11.27*		
9	44.44	3.47	1.74077	27.8
10	46.92	3.47		
11	292.23	16.00	1.71700	47.9
12	−33.02	4.47	1.75690	31.6
13	85.48	4.00		
14	−41.79	3.60	1.80400	46.6
15	−38.04	0.13		
16	−145.74	4.00	1.80400	46.6
17	−59.07			

$11.27^{*} = 6.00 + 5.27$

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.010	0.048	−0.053	0.147	0.042	89.4	−7.6%

h或ω%	LA′	ΔH′	x_i	x_s	$x_i - x_s$	K_{T1}	$K_{T0.7}$
100	−0.37	−6.86	12.11	−9.26	21.37	0.549	0.089
70	0.03	−0.59	0.42	−0.10	0.52	0.432	0.167



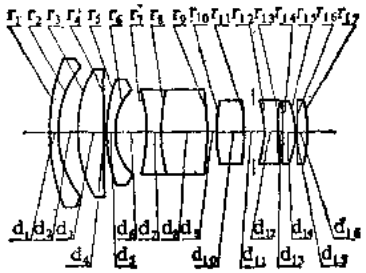


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-02-025

反 远 距 型 广 角 物 镜

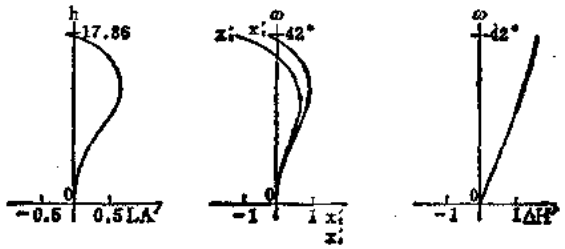
E.F.L＝100　　B.F.L＝155.26　　FNo.＝2.8　　F.A.＝±42°

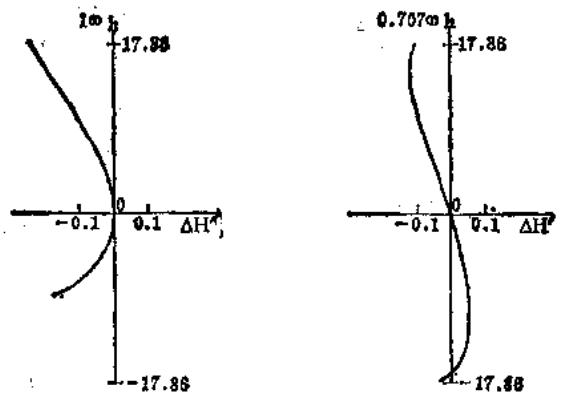


序号	r	d	n	ν
1	200.435	7.36	1.66672	48.4
2	98.228	15.53		
3	127.485	25.75	1.60311	60.7
4	－12083.021	0.41		
5	139.187	5.31	1.65830	57.3
6	48.876	29.83		
7	－150.423	12.26	1.51823	59.0
8	160.188	40.46	1.76690	31.7
9	－328.744	7.36		
10	125.200	25.34	1.67790	55.5
11	－283.586	16.35*		
12	－93.862	12.26	1.75520	27.5
13	184.101	3.68		
14	－829.509	11.85	1.64000	60.2
15	－73.813	0.41		
16	2795.879	10.22	1.69680	55.6
17	－132.971			

16.35* ＝ 8.00 ＋ 8.35

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	0.145	－0.150	0.104	0.263	2.411	90	1.7%
h 或 ω %	LA′	ΔH′	x_i'	x_s'	$x_i'-x_s'$	Kf_1	$Kf_{0.7}$
h 或 ω %	LA′	ΔH′	x_i'	x_s'	$x_i'-x_s'$	Kf_1	$Kf_{0.7}$
100	－0.12	1.64	－0.22	－1.21	0.99	0.652	0.295
70	0.69	1.23	0.97	0.74	0.23	0.064	0.037



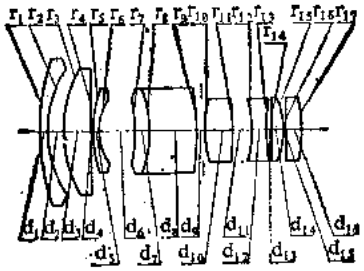


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-02-026

反 远 距 型 广 角 物 镜

E.F.L＝100　　B.F.L＝155.46　　FNo.＝2.8　　F.A.＝±42°

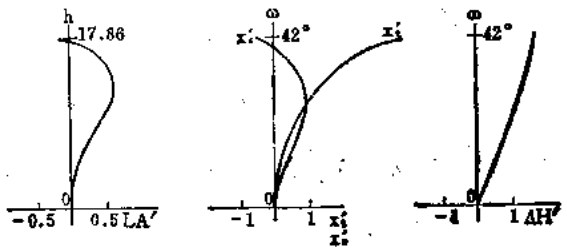


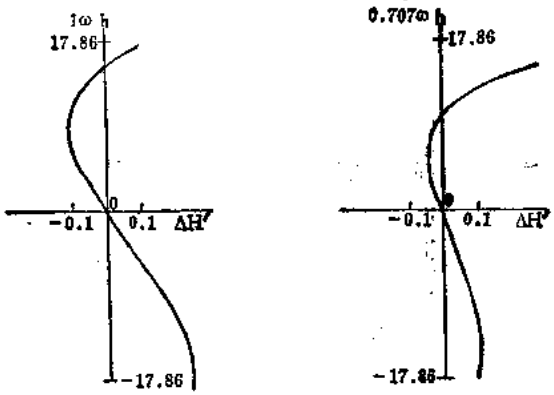
序号	r	d	n	ν
1	219.433	7.36	1.65830	57.3
2	100.510	15.94		
3	129.664	26.56	1.61117	55.8
4	－13349.894	0.41		
5	112.394	5.31	1.60738	56.7
6	46.004	29.42		
7	－146.458	19.21	1.75690	31.7
8	－104.666	30.24	1.53996	59.7
9	－239.643	7.36*		
10	116.330	25.34	1.86755	41.9
11	－306.450	16.35		
12	－98.378	12.42	1.76182	26.5
13	183.459	3.68		
14	－636.401	11.85	1.64000	60.2
15	－74.482	0.41		
16	2387.479	10.22	1.69680	55.6
17	－128.638			

7.36* = 4.00 + 3.36

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	0.134	－0.016	－0.090	0.319	2.643	90	1.8%

h 或 ω %	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{f1}'	$K_{f0.7}'$
100	－0.17	1.69	3.74	－0.64	4.38	－ 0.180	－ 0.080
70	0.62	1.28	1.44	1.01	0.43	－ 0.417	－ 0.096



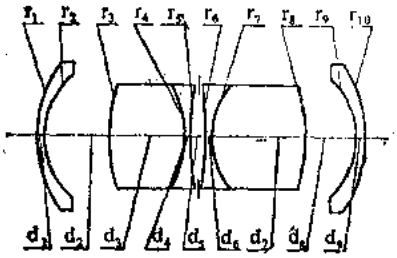


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-02-027

高性能广角物镜

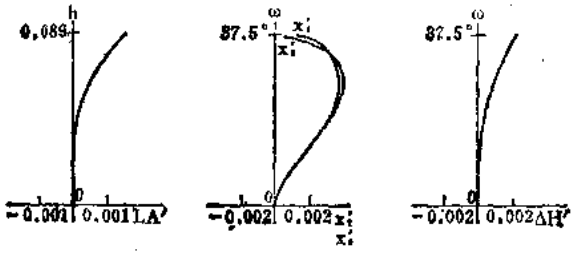
E.F.L=1　　B.F.L=0.640　　FNo.=5.6　　F.A.=±37.5°

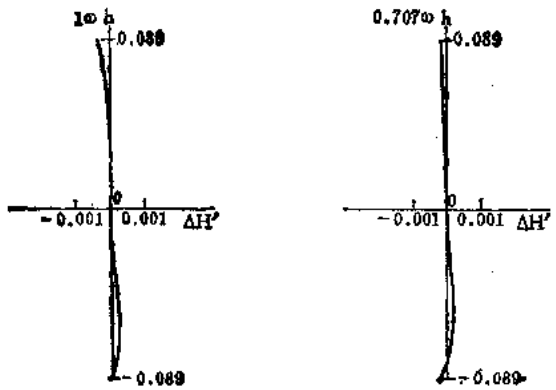


序号	r	d	n	ν
1	0.4706	0.0245	1.51823	59.0
2	0.2856	0.2204		
3	0.6632	0.2473	1.69350	53.4
4	−0.4037	0.0166	1.56732	42.8
5	1.2737	0.0514*		
6	−1.6107	0.0297	1.56732	42.8
7	0.2872	0.3145	1.69350	53.4
8	−0.5596	0.1857		
9	−0.2739	0.0268	1.60342	38.0
10	−0.4894			

0.0514* = 0.0257 + 0.0257

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	0.000004	0.000015	0.000019	0.000227	0.000638	0.76	0.3%
h 或 ω %	LA′	ΔH′	x_i'	x_s'	$x_i' - x_s'$	Kf_1	$Kf_{0.7}$
100	0.0016	0.0024	0.0013	0.0004	0.0009	0.00023	−0.000026
70	0.0004	0.0008	0.0037	0.0038	−0.0001	0.00019	−0.000007



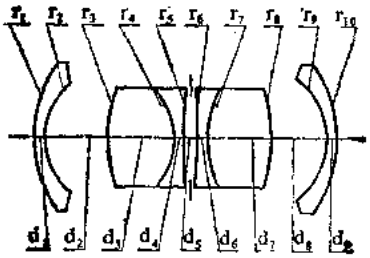


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-02-028

高性能广角物镜

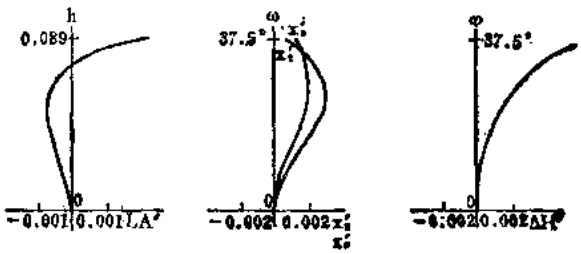
E.F.L＝1　　B.F.L＝0.687　　FNo.＝5.6　　F.A.＝±37.5°

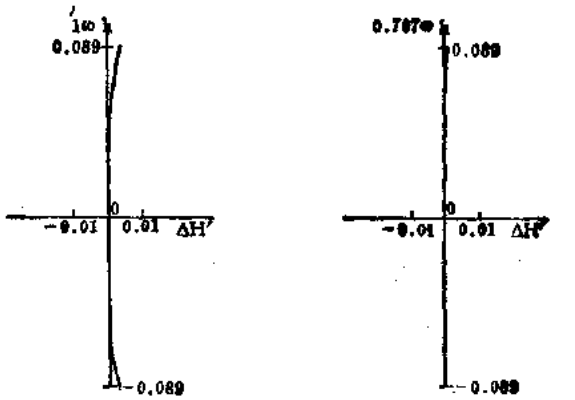


序号	r	d	n	ν
1	0.5034	0.030	1.51623	59.0
2	0.2620	0.240		
3	0.5940	0.260	1.65160	58.5
4	－0.2602	0.025	1.54814	45.9
5	2.2292	0.050*		
6	－2.9155	0.035	1.53172	48.9
7	0.4512	0.270	1.65160	58.5
8	－0.6499	0.200		
9	－0.2813	0.040	1.61293	37.0
10	－0.5158			

0.050*＝0.025＋0.025

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	－0.00006	0.00011	0.00005	0.00006	0.00141	0.76	0.8%
h或ω%	LA′	ΔH′	x_1'	x_2'	$x_1'-x_2'$	K_{T1}'	$K_{T9\cdot7}'$
100	0.0022	0.0062	0.0007	0.0014	－0.0007	－0.0033	－0.00671
70	－0.0007	0.0019	0.0031	0.0023	0.0008	－0.0006	0.00009
70	－0.0007	0.0019	0.0031	0.0023	0.0008	－0.0006	0.00009



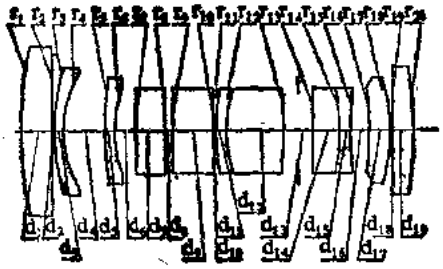


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-02-029

超广角大孔径照相物镜

E.F.L=100　　B.F.L=177.21　　FNo.=2　　F.A.=±42°**

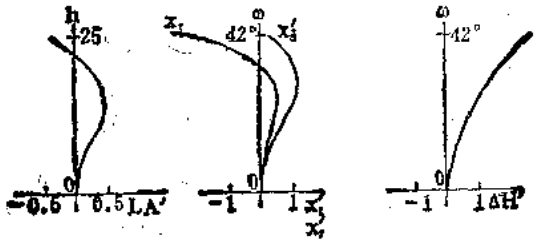


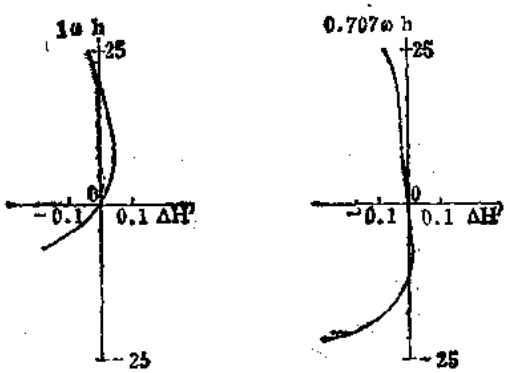
序号	r	d	n	v
1	205.76	18.60	1.63930	44.9
2	529.22	0.60		
3	101.55	6.28	1.73400	51.5
4	53.00	23.26		
5	228.01	5.63	1.77250	49.6
6	62.26	10.70		
7	640.49	15.86	1.61659	36.6
8	∞	3.26		
9	∞	23.26	1.61659	36.6
10	-2015.40	0.47		
11	110.68	6.98	1.69680	55.5
12	68.42	36.28	1.59340	34.8
13	-170.22	17.67*		
14	-1046.60	17.58	1.72000	43.7
15	-88.37	6.98	1.84666	23.9
16	212.49	10.00		
17	-232.53	13.95	1.71300	53.9
18	-88.07	0.47		
19	459.97	13.95	1.72000	50.3
20	-199.85			

17.67* = 8.00 + 9.67

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_6	HI	QP(1ω)
	0.531	-0.429	9.342	0.662	3.045	89.99	3%
	0.531	-0.429	9.342	0.662	3.045	89.99	3%

h 或 ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
100	-0.43	2.76	-2.82	0.33	-3.15	0.779	0.365
70	0.46	1.32	0.52	1.18	-0.66	0.383	0.063



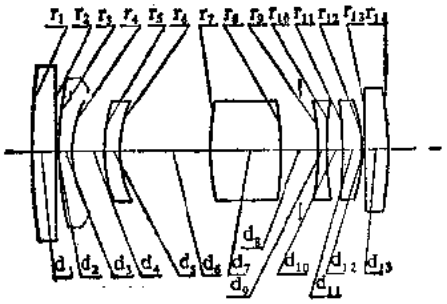


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-02-030

反 远 距 型 广 角 物 镜

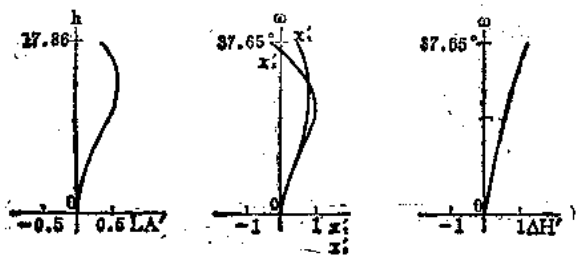
E.F.L=100　　B.F.L=137.40　　FNo.=2.8　　F.A.=±37.65°

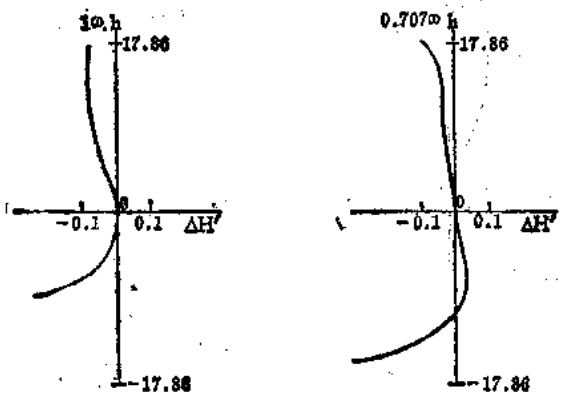


序号	r	d	n	ν
1	284.087	9.29	1.66680	33.0
2	818.789	0.36		
3	128.262	4.29	1.62299	58.1
4	46.165	13.78		
5	60.464	5.36	1.62299	58.1
6	45.794	37.86		
7	92.730	29.43	1.72000	43.7
8	−130.710	16.98*		
9	− 95.122	3.57	1.78472	25.7
10	128.375	5.89		
11	−176.667	7.86	1.62299	58.1
12	− 57.293	0.36		
13	590.045	8.93	1.63854	55.4
14	−118.620			

16.98* = 8.00 + 8.98

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	0.111	−0.119	0.021	0.323	1.400	77.1	1.8%
h 或 ω %	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
100	0.35	1.43	0.48	−0.22	0.70	1.053	0.379
70	0.53	0.80	0.81	1.10	−0.29	0.415	0.061



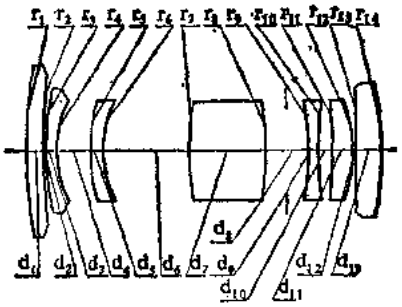


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-02-031

反远距型广角物镜

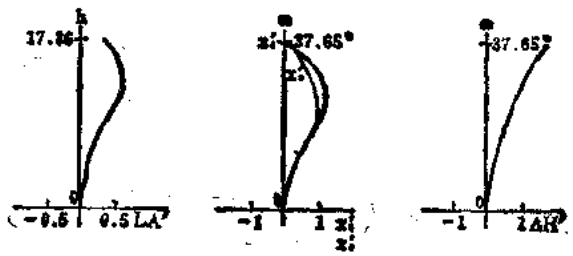
E. F. L＝99.62　　B. F. L＝148.17　　FNo. ＝2.79　　F. A. ＝±37.65°

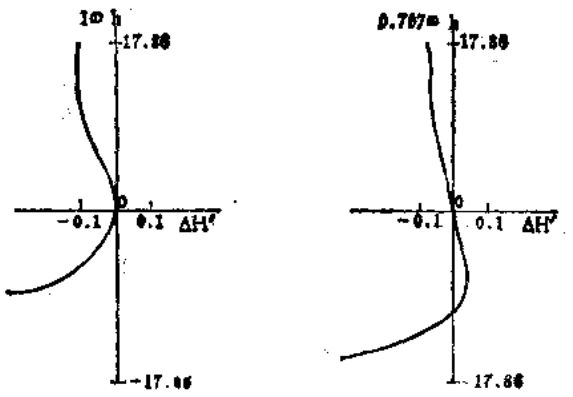


序　号	r	d	n	ν
1	210.115	7.36	1.68893	31.1
2	430.095	0.36		
3	116.311	4.29	1.62041	60.3
4	45.104	13.74		
5	71.592	6.36	1.62041	60.3
6	45.916	34.24		
7	160.638	32.98	1.69700	48.5
8	−117.168	18.77*		
9	−102.023	3.57	1.76182	26.6
10	142.817	5.89		
11	−197.402	7.86	1.62299	58.1
12	−57.312	0.36		
13	824.064	8.93	1.63854	55.4
14	−127.968			

18.77* = 9.00 + 9.77

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.116	−0.127	0.074	0.265	1.375	76.8	2.3%
h 或 ω %	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
100	0.34	1.82	−0.107	0.097	−0.204	1.296	0.493
70	0.54	0.83	1.193	1.109	0.084	0.443	0.080



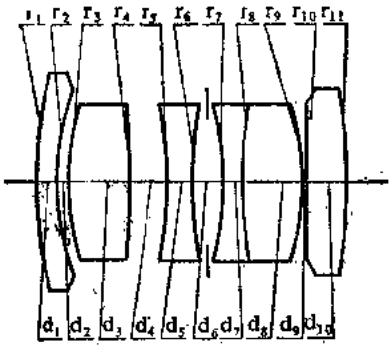


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-02-032

总长短的准广角照相物镜

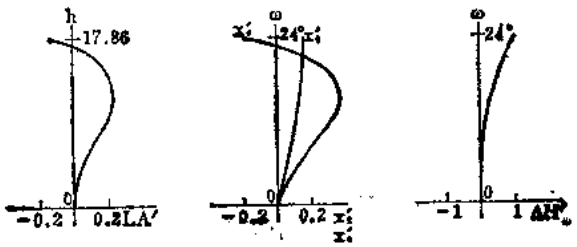
E. F. L＝100　　B. F. L＝95.98　　FNo. ＝2.8　　F. A. ＝±24°

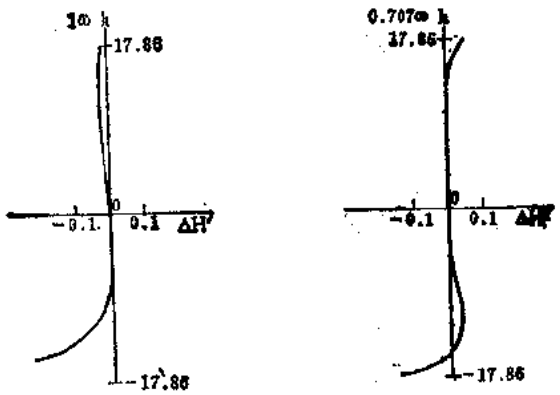


序　号	r	d	n	ν
1	71.91	3.26	1.72825	28.5
2	42.26	1.59		
3	43.90	9.18	1.76200	40.2
4	－248.88	6.76		
5	－59.63	4.11	1.58913	61.1
6	71.64	5.44*		
7	－47.40	3.36	1.72825	28.5
8	67.40	10.74	1.72000	50.2
9	－45.18	0.41		
10	399.80	6.15	1.76200	40.2
11	－94.37			

5.44* = 2.72 + 2.72

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.059	－0.039	－0.019	0.131	0.428	44.5	2.2%
h或ω%	LA′	ΔH′	x_i'	x_s'	$x_i'-x_s'$	K_{T1}'	$K_{T0.7}'$
100	－0.15	1.01	0.155	－0.191	0.346	0.299	0.062
...	...	...	...	...	...	...	...
70	0.24	0.36	0.122	0.378	－0.256	0.053	－0.014



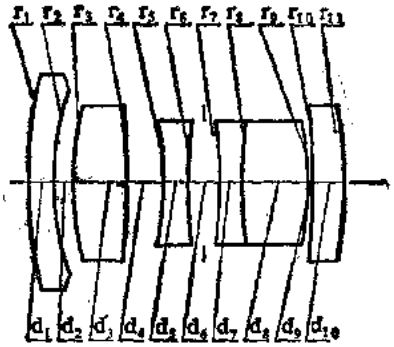


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-02-033

总长短的准广角照相物镜

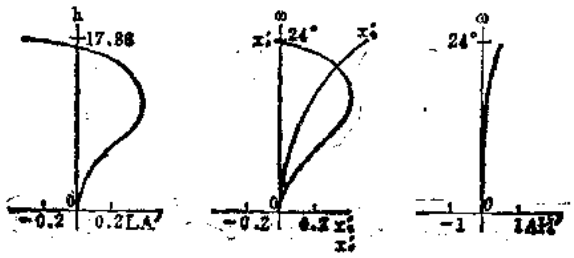
E. F. L＝100　　B. F. L＝95.93　　FNo＝2.8　　F. A. ＝±24°

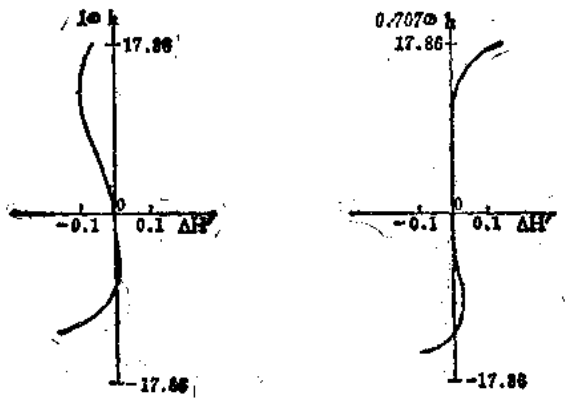


序　号	r	d	n	ν
1	76.53	4.09	1.72825	28.5
2	44.06	2.49		
3	49.22	9.67	1.80610	40.9
4	−173.55	6.20		
5	−48.98	3.43	1.58913	61.1
6	82.29	5.18*		
7	−64.49	3.36	1.76182	26.6
8	84.16	10.04	1.77250	49.6
9	−50.49	0.41		
10	−175.36	5.76	1.80610	40.9
11	−63.53			

5.18* ≈ 2.59 + 2.59

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.103	−0.062	−0.010	0.123	0.266	44.5	1.1%
h或ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
100	−0.33	0.49	0.48	−0.03	0.51	0.641	0.124
---	----	----	----	----	----	-----	-----
70	0.43	0.20	0.21	0.41	−0.20	0.217	−0.006



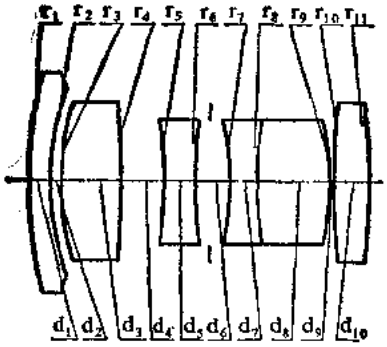


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-02-034

总长短的准广角照相物镜

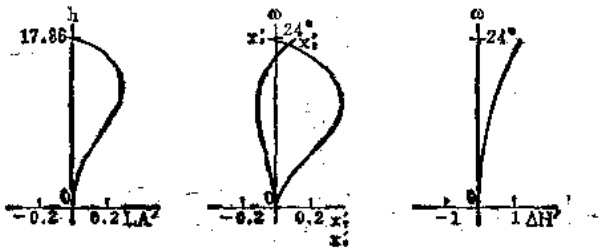
E. F. L＝100　　B. F. L＝98.97　　FNo. ＝2.8　　F. A. ≒ ±24°

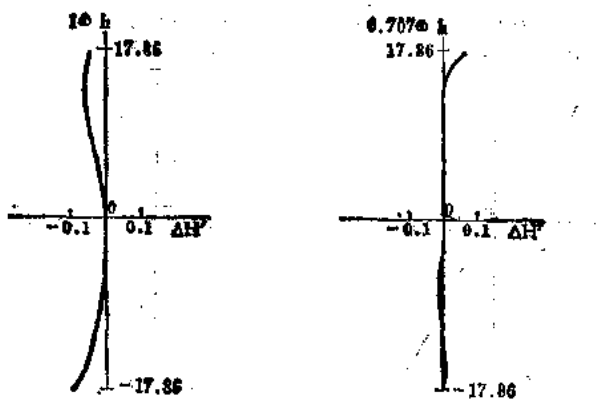


序　号	r	d	n	v
1	73.13	3.44	1.72825	28.5
2	40.94	1.69		
3	43.15	9.54	1.72342	38.0
4	－200.63	6.91		
5	－61.94	4.35	1.58913	61.1
6	84.07	5.49*		
7	－44.49	4.76	1.72825	28.5
8	60.51	11.60	1.69350	50.8
9	－43.72	0.40		
10	241.43	6.43	1.72342	38.0
11	－102.08			

5.49* = 2.70 + 2.79

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.060	－0.022	－0.046	0.154	0.530	44.5	2.8%
h 或 ω %	LA′	ΔH′	x_i'	x_s'	$x_i' - x_s'$	K_{f1}'	$K_{f0.7}'$
100	－0.01	1.26	0.12	－0.05	0.17	0.061	0.045
...	...	...	...	...	...	...	...
70	0.28	0.44	－0.11	0.39	－0.50	－0.033	－0.001



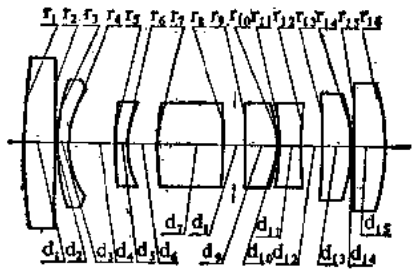


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-02-035

反远距型广角照相物镜

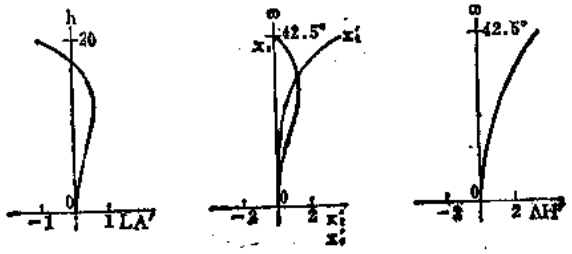
E. F. L＝100　　B. F. L＝168.43　　FNo. ＝2.5　　F. A. ＝±42.5°

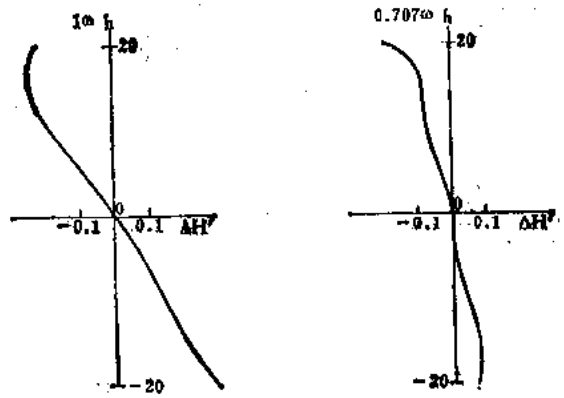


序　号	r	d	n	ν
1	264.57	15.21	1.51633	64.1
2	2056.82	0.41		
3	92.90	4.97	1.51633	64.1
4	42.10	22.37		
5	157.49	5.21	1.51633	64.1
6	40.58	14.59		
7	125.82	33.51	1.80518	25.4
8	−315.39	11.17*		
9	2718.88	15.01	1.51633	64.1
10	−58.89	0.57		
11	−109.37	10.22	1.80518	25.4
12	138.24	11.61		
13	−442.94	14.05	1.51633	64.1
14	−74.18	0.41		
15	662.76	16.34	1.51633	64.1
16	−105.61			

11.17* = 6.00 + 5.17

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.253	−0.095	−0.082	0.534	4.109	91.6	3.7%
h 或 ω %	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
100	−1.07	3.42	3.90	0.14	3.76	−0.031	0.0213
70	0.62	1.88	0.79	1.42	−0.63	0.071	0.0091



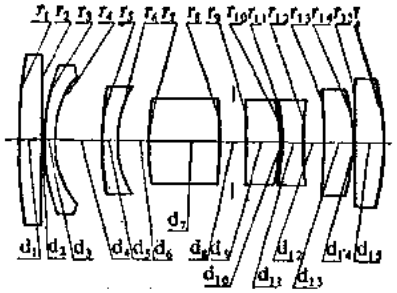


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-02-036

反远距型广角照相物镜

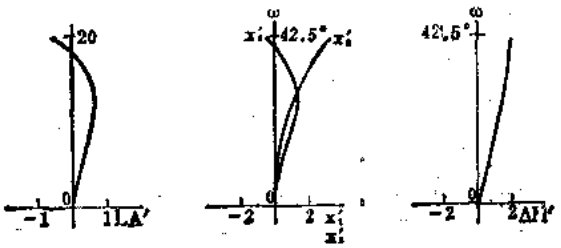
E. F. L＝100　　B. F. L＝162.76　　FNo. ＝2.5　　F. A. ＝±42.5°

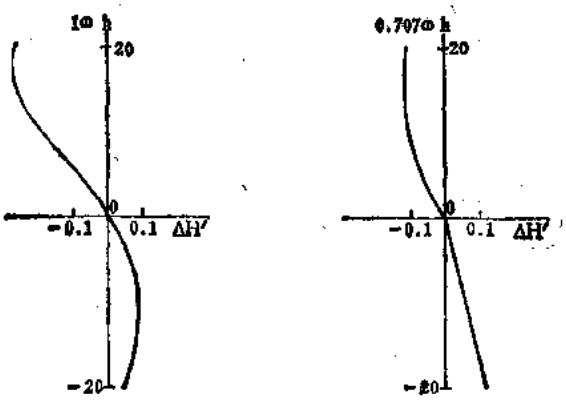


序　号	r	d	n	ν
1	316.47	11.04	1.65844	50.9
2	1393.72	0.41		
3	92.85	4.88	1.65844	50.9
4	46.25	22.90		
5	138.89	7.40	1.64000	60.1
6	47.03	14.92		
7	121.60	35.15	1.80518	25.4
8	－336.11	13.02*		
9	650.28	16.78	1.64000	60.1
10	－73.21	0.57		
11	－105.18	9.64	1.80518	25.4
12	138.91	10.46		
13	－434.58	14.61	1.64000	60.1
14	－80.36	0.41		
15	－640.54	14.12	1.64000	60.1
16	－115.37			

13.02* = 6.50 + 6.52

	ΣS₁	ΣS₂	ΣS₃	ΣS₄	ΣS₅	HI	QP(1ω)
	0.239	－0.071	－0.016	0.463	3.478	91.6	2.3%
h 或 ω%	LA′	ΔH′	x_1'	x_2'	$x_1'-x_2'$	K_{T1}	$K_{fo.7}$
100	－0.68	2.17	3.53	－0.16	3.69	0.111	0.0905
70	0.66	1.56	1.36	1.40	－0.04	0.003	0.0238



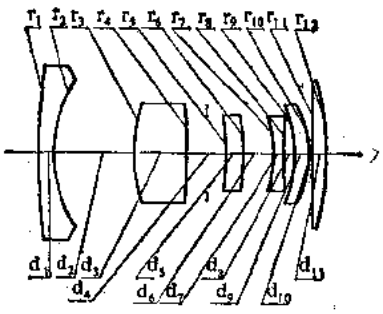


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-02-037

反远距型广角物镜

E. F. L＝1　　B. F. L＝1.06　　FNo. ＝2.8　　F. A. ＝±32°

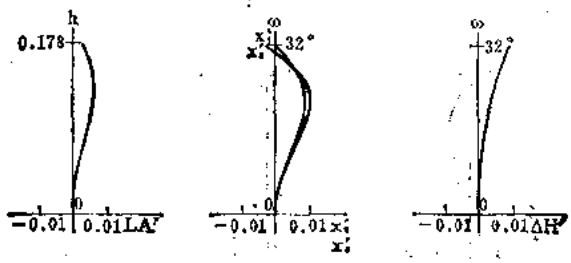


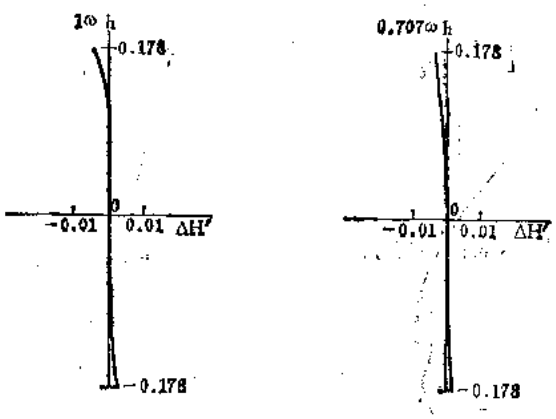
序　号	r	d	n	v
1	2.6542	0.0570	1.5725	57.5
2	0.5212	0.3292		
3	0.6639	0.2149	1.6968	55.6
4	－2.3966	0.1699*		
5	－0.9176	0.0700	1.6583	58.5
6	－0.8435	0.1326		
7	－0.4272	0.0433	1.7006	30.1
8	2.5205	0.0450		
9	－1.8428	0.0670	1.7305	54.4
10	－0.5054	0.0029		
11	5.8432	0.0680	1.6775	55.5
12	－1.0495			

0.1699* = 0.0800 + 0.0899

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.00112	0.00057	－0.00007	0.00245	0.00828	0.62	1.5%

h 或 ω %	LA′	ΔH′	x_t'	x_s'	$x_t' - x_s'$	K_{f1}'	$K_{f0.7}'$
100	0.0022	0.009	－0.0013	－0.0017	0.0004	0.00152	－0.000006
130	0.0022	0.005	－0.0013	－0.0022	－0.0009	0.00132	－0.000656
70	0.0059	0.005	0.0077	0.0090	－0.0013	0.00136	0.000655



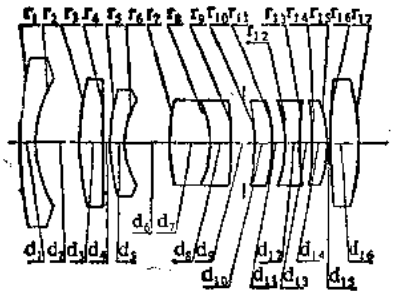


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-02-038

反 远 距 型 广 角 物 镜

E. F. L＝1　　B. F. L＝1.37　　FNo. ＝2　　F. A. ＝ ±38°

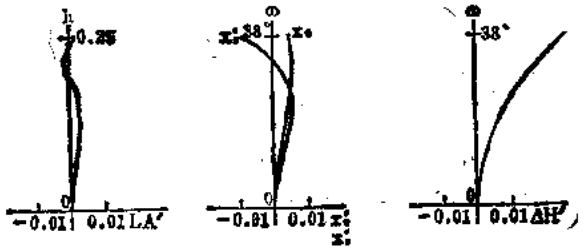


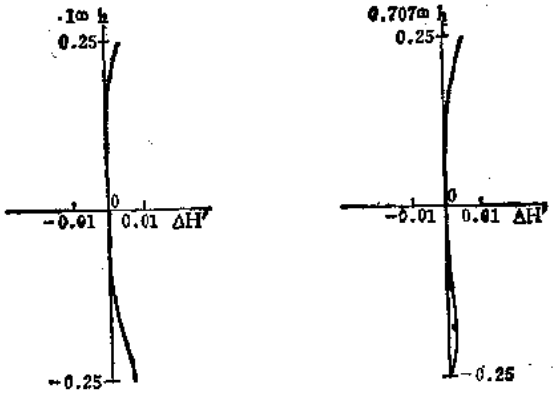
序　号	r	d	n	ν
1	2.6524	0.1030	1.6031	60.7
2	0.7652	0.3086		
3	1.6973	0.1441	1.6668	33.1
4	−147.9947	0.0400		
5	1.3048	0.0959	1.6890	49.3
6	0.5398	0.3153		
7	1.2986	0.2701	1.7050	54.8
8	−0.6026	0.1419	1.5190	57.3
9	−2.3600	0.1640*		
10	−1.2368	0.1100	1.5934	34.1
11	−0.8499	0.0860		
12	−0.7622	0.1062	1.7847	25.7
13	2.4184	0.0855		
14	−1.8575	0.1007	1.7530	52.4
15	−0.7447	0.0067		
16	4.1620	0.1950	1.7050	54.8
17	−1.4574			

0.1640* = 0.0800 + 0.0840

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.0024	−0.0009	−0.0010	0.0051	0.0254	0.78	3.6%

h 或 ω %	LA′	ΔH′	x_i'	x_s'	$x_i' - x_s'$	Kf_1	$Kf_{0.7}$
100	0.0006	0.028	0.0048	−0.0109	0.0157	−0.0043	−0.0016
70	0.0021	0.010	0.0043	0.0062	−0.0019	−0.0027	−0.0014



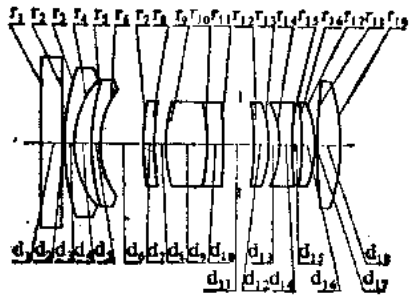


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-02-039

反 远 距 型 广 角 物 镜

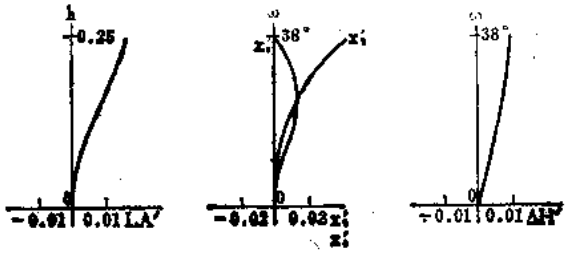
E. F. L＝1　　B. F. L＝1.27　　FNo.＝2　　F. A. ＝±38°

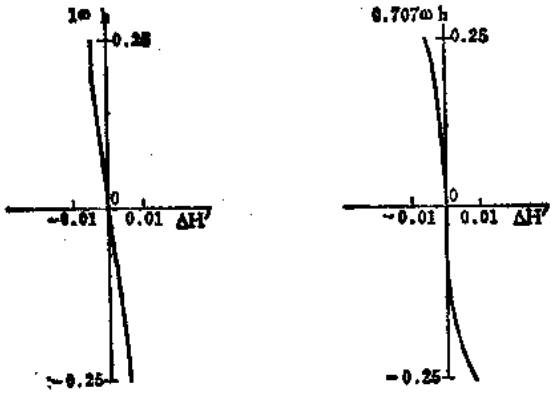


序　号	r	d	n	ν
1	8.9525	0.1350	1.6935	53.4
2	-26.3137	0.0040		
3	1.6630	0.0600	1.5168	64.0
4	0.6306	0.1152		
5	1.4500	0.0600	1.5168	64.0
6	0.5848	0.2622		
7	1.8044	0.0600	1.5168	64.0
8	1.9818	0.0704		
9	0.9816	0.2676	1.6975	48.2
10	-1.2300	0.0940	1.5231	58.6
11	-5.0777	0.1950*		
12	-1.9893	0.1097	1.6200	36.3
13	-0.8138	0.0860		
14	-0.6430	0.1064	1.8052	25.4
15	2.6269	0.0500		
16	-2.6680	0.1000	1.7570	47.9
17	-0.7408	0.0067		
18	3.8156	0.1800	1.7050	54.8
19	-1.3884			

0.1950*＝0.0950＋0.1000

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.0037	-0.0007	-0.0005	0.0067	0.0236	0.78	1.2%
	0.0037	-0.0007	-0.0005	0.0067	0.0236	0.78	1.2%
h 或 ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
100	0.016	0.010	0.045	-0.001	0.046	-0.0002	-0.0002
70	0.011	0.008	0.014	0.012	0.002	-0.0012	-0.0004





PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-03-040

变倍比大的广角变焦距物镜

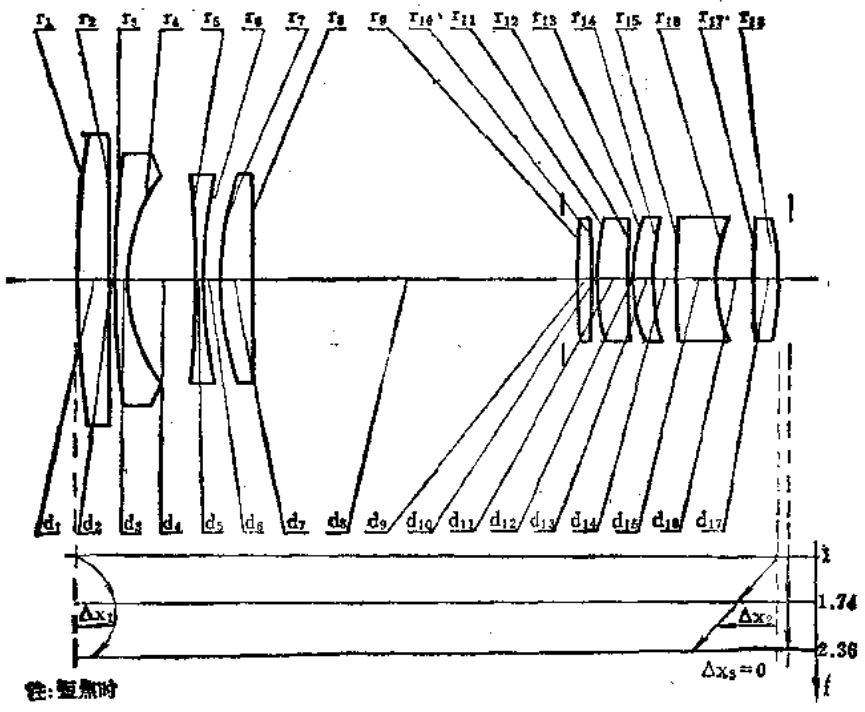
E.F.L＝1～2.36　　B.F.L＝1.49～2.60　　FNo.＝3.5～4.5

F.A.＝±27°**～±12.27°**

序　号	r	d	n	ν
1	5.0189	0.1563	1.58913	61.1
2	－30.5650	0.0035		
3	4.7923	0.0590	1.80610	40.9
4	0.8060	0.3439		
5	－9.3508	0.0521	1.78650	50.2
6	2.1211	0.0778		
7	1.4414	0.1580	1.76180	27.1
8	25.5287	***1*		
9	3.3349	0.0858	1.77250	49.6
10	－6.2150	0.0035		
11	1.1636	0.1691	1.52830	51.1
12	7.3634	0.0035		
13	0.6434	0.0973	1.51823	59.0
14	1.1888	0.0913	1.84666	23.9
15	4.9821	0.1744		
16	0.6116	0.1688		
17	3.4938	0.1320	1.54072	47.2
18	－1.2504			
18	－1.2504			

E.F.L＝1.74

***1＝0.4663



PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

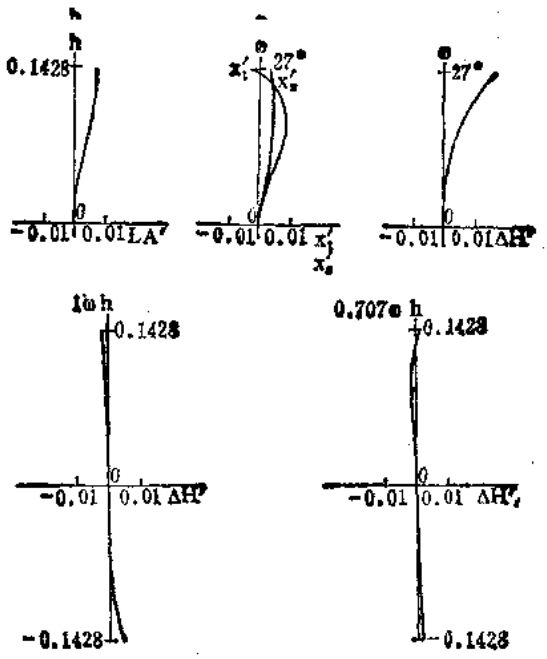
09-03-040-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.000641	0.000062	−0.000003	0.000375	0.006057	0.51	3.3%
h 或 ω %	LA′	ΔH′	x_1'	x_2'	$x_1' - x_2'$	K_{T1}'	$K_{T0.7}'$
100	0.0073	0.016	−0.003	0.004	−0.007	−0.0018	−0.0002
70	0.0060	0.006	0.009	0.005	0.004	−0.0015	0.0003

E.F.L=1

* * *1=1.5274

* * *1*=1.5274*=1.4574+0.0700



PDF 文件以 "PDF 制作工厂" 试用版创建 http://www.fineprint.com

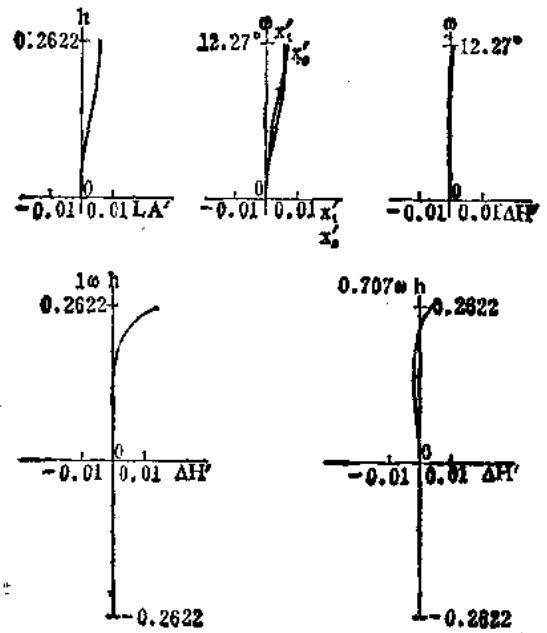
99-03-040-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.00032	0.00026	0.00006	0.00023	0.00008	0.51	0.02%
h 或 ω %	LA′	ΔH′	x_i	x_s'	$x_i' - x_s'$	K_{T_1}'	$K_{T_{0.7}}'$
100	0.0066	0.00015	0.006	0.007	−0.001	−0.0080	−0.0009
70	0.0050	0.00009	0.005	0.004	0.001	−0.0026	0.0001

E. F. L = 2.36

* * * 1 = 0.0936

* * * 1* = 0.0936* = 0.0236 + 0.0700



PDF 文件以 "PDF 制作工厂" 试用版创建 http://www.fineprint.com

编号：09-03-041

变倍比大的广角变焦距物镜

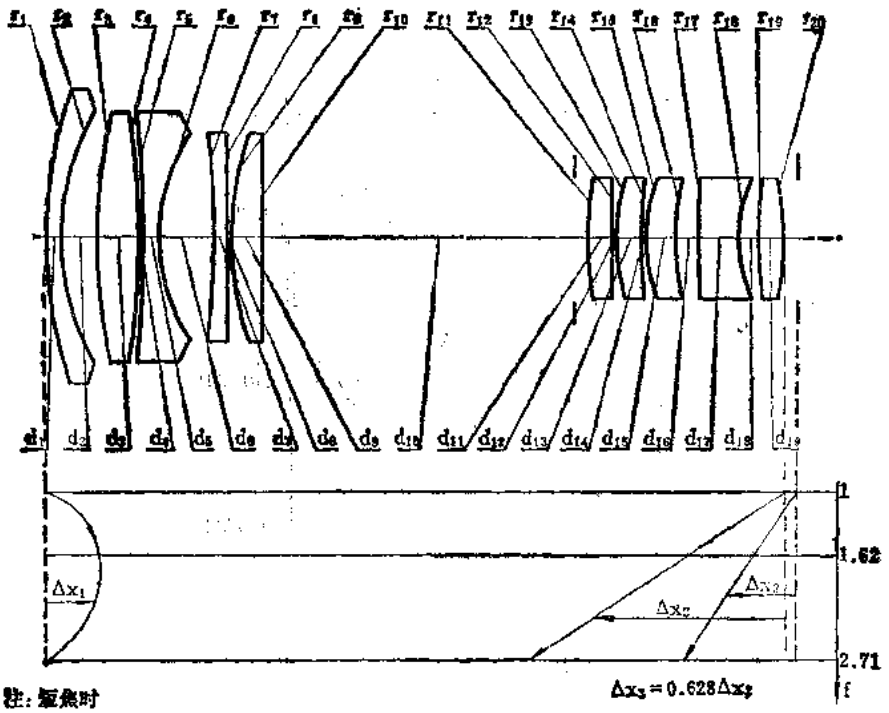
E. F. L＝1～2.70　B. F. L＝1.59～3.08　FNo. ＝45　F. A. ＝±20°**～±8.3°**

序　号	r	d	n	v
1	2.2537	0.0694	1.81600	46.6
2	1.1609	0.1666		
3	2.7666	0.2082	1.72916	54.7
4	－3.8610	0.0035		
5	－7.2312	0.0590	1.83481	42.7
6	0.8623	0.2513		
7	－3.6135	0.0521	1.69680	55.5
8	16.1380	0.0153		
9	1.4680	0.1406	1.80518	25.4
10	18.7409	***1*		
11	1.7249	0.1180	1.69680	55.5
12	－29.2377	0.0069		
13	1.0075	0.1232	1.50048	65.9
14	2.7792	0.0035		
15	0.7513	0.1180	1.48749	70.1
16	1.3197	0.1045		
17	6.2101	0.1683	1.84666	23.9
18	0.6330	0.0861		
19	2.2208	0.1163	1.62588	35.7
20	－1.6372			

E. F. L＝1.62

*** 1＝0.6893

*** 1＝0.6893



注：短焦时

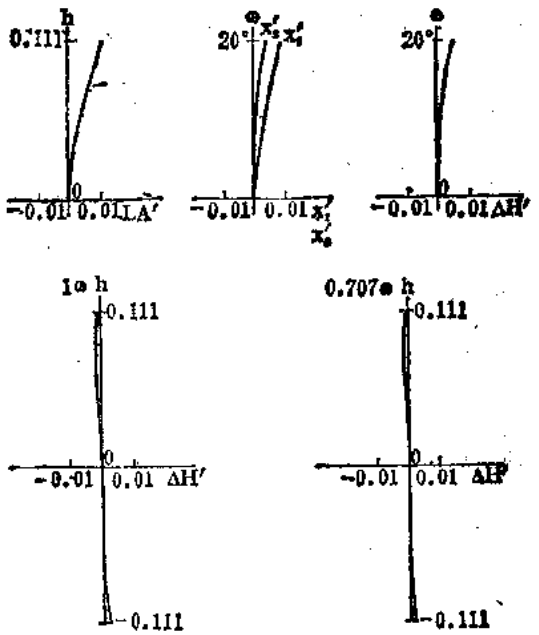
PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.00035	0.00005	0.00008	0.00005	0.00154	0.35	1.7%
h或ω%	LA′	ΔH′	x_i'	x_i'	$x_i'-x_i'$	K_{f1}	$K_{f0.7}$
100	0.010	0.006	0.008	0.004	0.004	−0.00044	0.00009
70	0.006	0.002	0.006	0.002	0.004	−0.00042	0.00010

E. F. L = 1

* * * 1 = 1.5647

* * * 1^{*} = 1.5647^{*} = 1.4947 + 0.0700



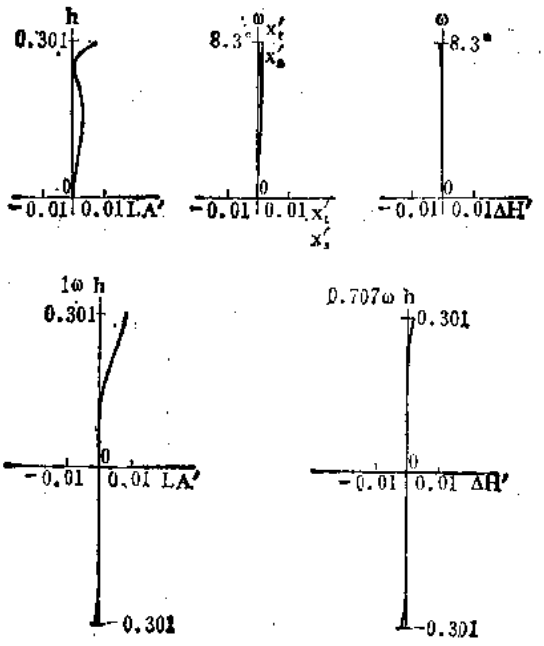
PDF 文件以 "PDF 制作工厂" 试用版创建 http://www.fineprint.com

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.00069	0.00008	0.00001	0.00000	-0.00003	0.39	-0.04
h或ω%	LA′	ΔH′	x_t	x_a'	$x_t - x_a$	K_{T1}	$K_{T0.7}$
100	0.0076	-0.00018	0.0002	0.0017	-0.0015	-0.00389	-0.00159
70	0.0034	-0.00005	0.0010	0.0012	-0.0002	-0.00109	-0.00056

E. F. L = 2.70

$* * * i = 0.1193$

$* * * i^* = 0.1193^* = 0.0493 + 0.0700$



PDF 文件以 "PDF 制作工厂" 试用版创建 http://www.fineprint.com

编号：09-03-042

变倍比大的广角变焦距物镜

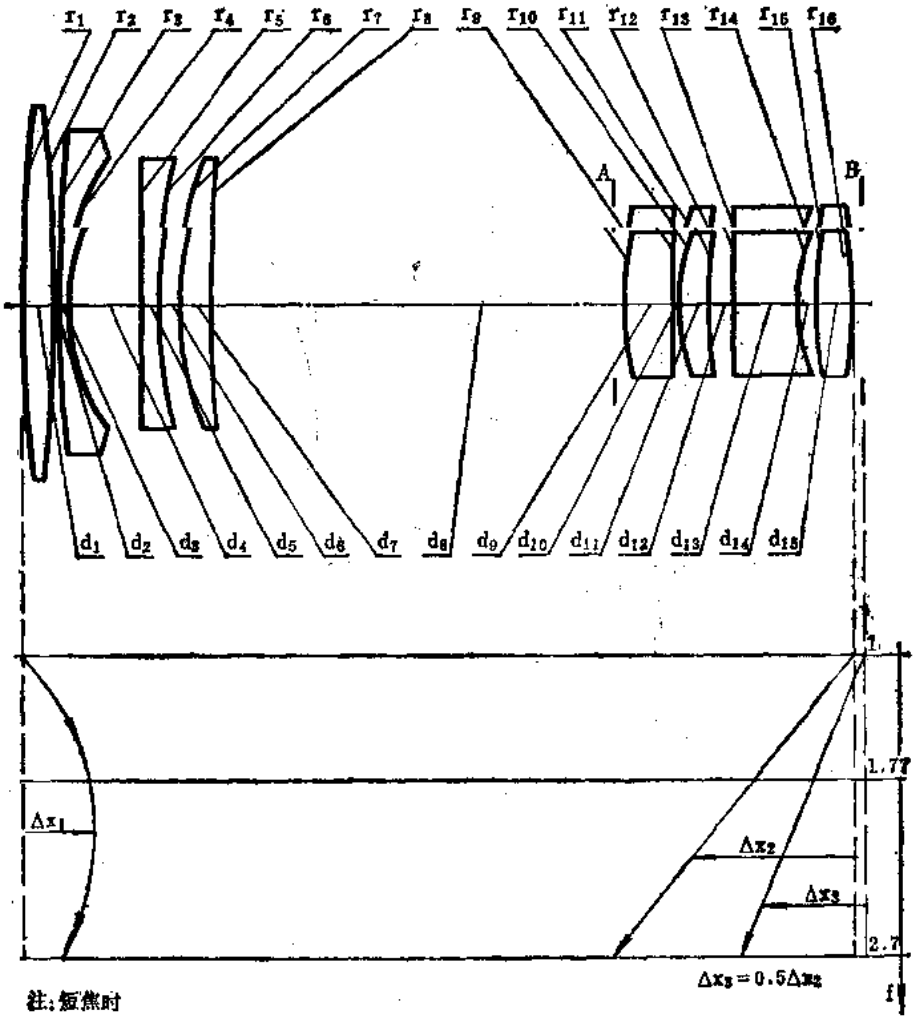
E. F. L＝1～2.70　　B. F. L＝1.55～2.93　　FNo.＝3.5～4.5

F. A. ＝±20° * *～±8.2° **

序　号	r	d	n	v	序　号	r	d	n	v
1	9.5257	0.1319	1.61800	63.4	9	1.3969	0.2376	1.80400	46.6
2	－9.3309	0.0035			10	108.5188	0.0035		
3	5.2263	0.0416	1.83481	42.7	11	0.7779	0.1249	1.67000	57.4
4	0.8187	0.2979			12	1.8514	0.0881		
5	17.4902	0.0486	1.84100	43.2	13	35.2537	0.2528	1.84666	23.9
6	1.9875	0.0755			14	0.6369	0.0867		
7	1.3272	0.1492	1.80518	25.4	15	1.6809	0.1145	1.59551	39.2
8	5.9227	* * *1*			16	－1.6579			

E. F. L＝1.77

* * *1＝0.6192



注：短焦时

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

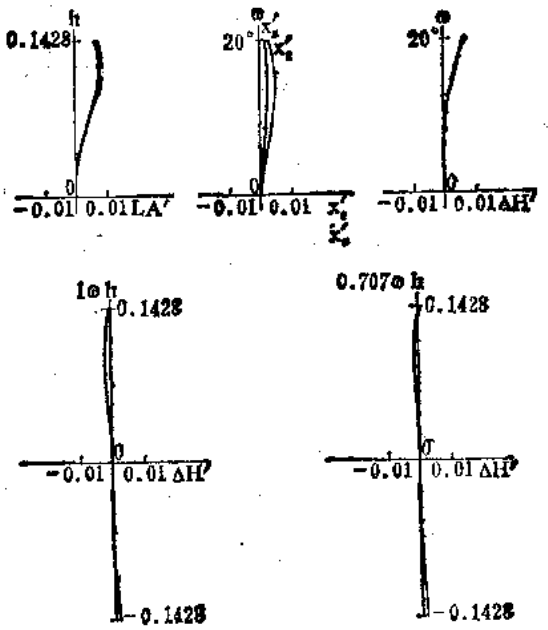
09-03-042-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.00084	0.00024	0.00008	0.00006	0.00241	0.36	2%
h或ω%	LA′	ΔH′	x_i	x_i'	$x_i - x_i'$	K_{f1}	$K_{f0.7}$
100	0.0087	0.007	0.003	0.002	0.001	−0.00061	0.00045
70	0.0073	0.002	0.005	0.002	0.003	−0.00094	0.00045

E. F. L = 1

$***1 = 1.7301$

$***1^{\omega} = 1.7301^{\omega} = 1.6601 + 0.0700$



PDF 文件以 "PDF 制作工厂" 试用版创建 http://www.fineprint.com

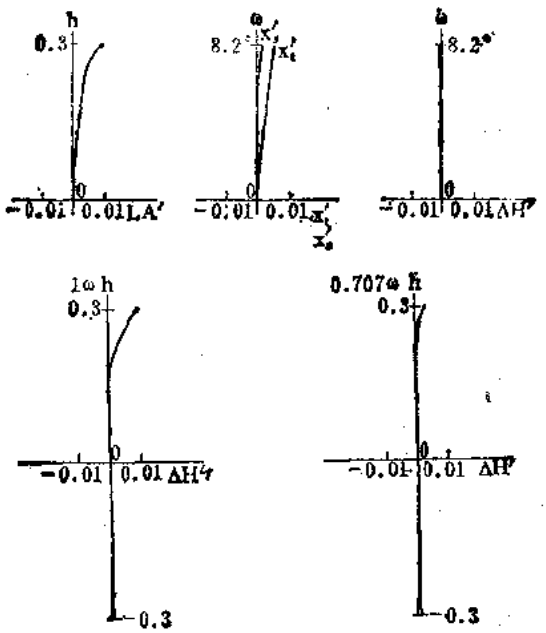
09-03-042-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.000313	0.000180	0.000059	0.000044	-0.000005	0.38	-0.01%
h 或 ω %	LA′	ΔH′	x_i'	x_i'	$x_i'-x_i'$	K_{f1}'	$K_{f4.7}'$
100	0.0081	-0.00006	0.005	0.002	0.003	-0.0047	-0.0007
70	0.0035	-0.00001	0.003	0.001	0.002	-0.00141	0.00003

E. F. L = 2.70

* * * I = 0.1249

* * * I* = 0.1249* = 0.0549 + 0.0700



PDF 文件以 "PDF 制作工厂" 试用版创建 http://www.fineprint.com

编号：09-03-043

广 角 变 焦 距 物 镜

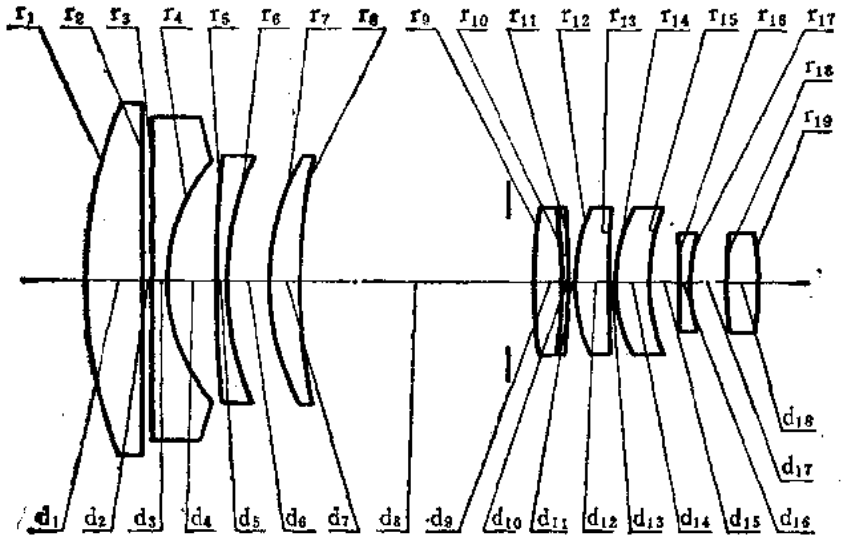
E. F. L＝100～191　　B. F. L＝121.25～184.10　　FNo. ＝3.5

F. A. ＝±20°**～±11°**

序　号	r	d	n	ν
1	171.693	22.8	1.60323	42.6
2	－2879.172	1.9		
3	2776.004	4.2	1.67790	55.5
4	66.347	18.9		
5	496.166	4.2	1.71300	53.9
6	118.458	15.8		
7	94.690	10.8	1.59507	35.6
8	227.424	***1*		
9	202.204	9.7	1.62041	60.3
10	－202.204	2.8	1.80518	25.5
11	－400.225	0.3		
12	78.964	13.6	1.51118	50.9
13	682.897	0.3		
14	57.583	12.5	1.51680	64.2
15	77.700	10.8		
16	－1029.495	4.2	1.80518	25.5
17	51.911	14.4		
18	179.496	10.5	1.64831	33.8
19	－108.731			

E. F. L＝137.4

***1＝40.81



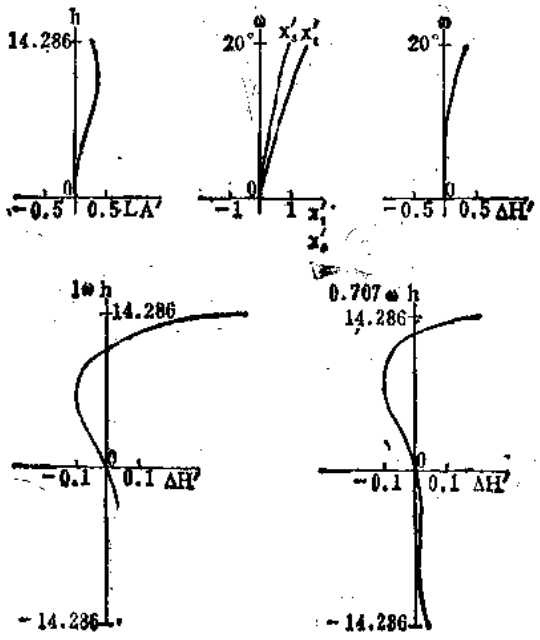
PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_6	HI	QP(1ω)
	0.046	0.041	0.018	0.029	0.128	36.5	0.9%
h或ω%	LA′	ΔH′	x_i	x_i'	$x_i - x_i'$	K_{f1}	$K_{f0.7}$
100	0.31	0.36	1.55	0.79	0.76	−0.237	0.019
70	0.39	0.13	0.97	0.51	0.46	−0.124	0.042

E. F. L = 100

* * * 1 = 92.86

* * * 1* = 92.86* = 92.06 + 0.80



PDF 文件以 "PDF 制作工厂" 试用版创建 http://www.fineprint.com

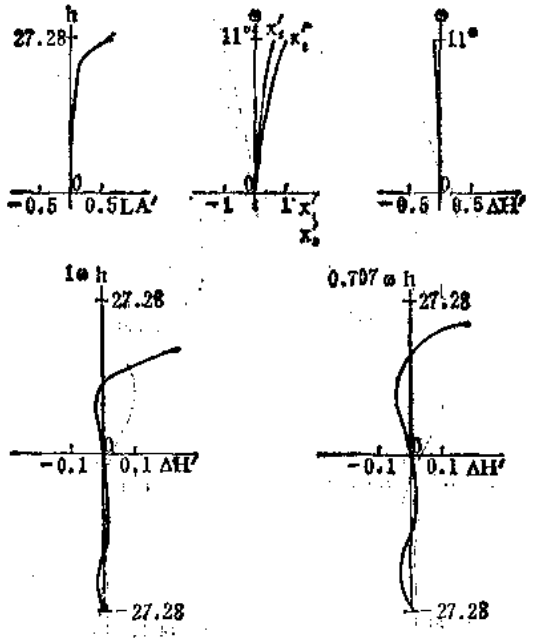
08-03-048-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_6	HI	QP(1ω)
	0.007	0.037	0.011	0.030	−0.018	37.1	−0.2%
h或ω%	LA′	ΔH′	x_1'	x_2'	$x_1'-x_2'$	K_{f1}	$K_{f0.7}$
100	0.67	−0.07	0.91	0.70	0.21	−0.858	−0.124
70	0.10	−0.02	0.62	0.42	0.20	−0.248	0.004

E. F. L = 191

* * * 1 = 1.80

* * * 1^{*} = 1.80^{*} = 1.00 + 0.80



PDF 文件以 "PDF 制作工厂" 试用版创建 http://www.fineprint.com

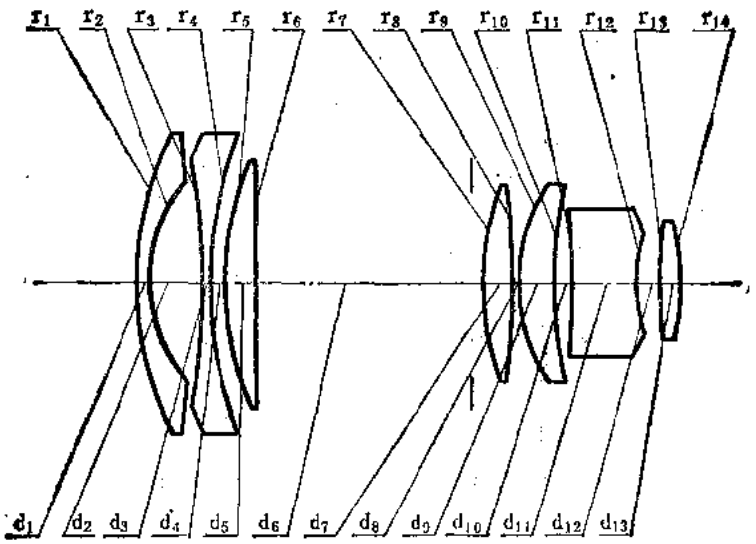
编号：09-03-044

广 角 变 焦 距 物 镜

E. F. L＝36.0～68.5　　B. F. L＝44.84～66.23　　FNo. ＝2.8

F. A. ＝±32.3°～±17.5°

序　号	r	d	n	ν
1	61.489	1.98	1.81600	46.8
2	28.292	10.19		
3	－115.896	1.40	1.69680	56.5
4	77.925	3.30		
5	54.580	5.01	1.77551	37.8
6	－1879.350	* * * 1*		
7	54.200	4.99	1.69680	56.5
8	－159.222	2.00		
9	35.335	6.49	1.81600	46.8
10	81.154	2.60		
11	－131.435	13.24	1.80518	25.4
12	26.491	4.19		
13	99.329	3.80	1.75700	47.9
14	－48.129			



PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

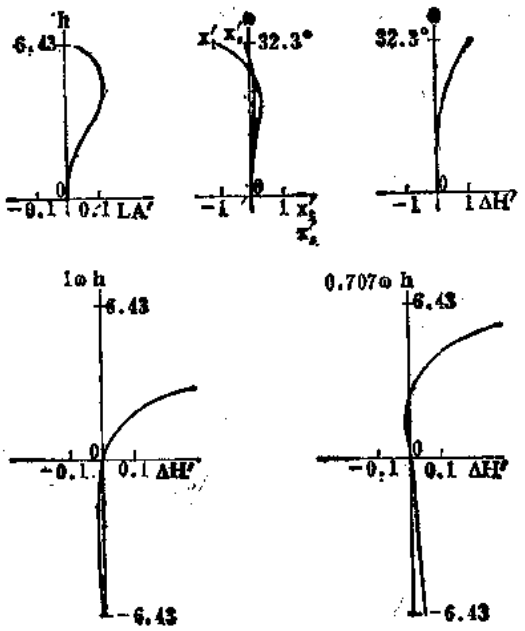
09-03-044-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.026	0.033	0.043	0.020	0.588	22.7	4.8%
h或ω%	LA′	ΔH′	x_1'	x_2'	$x_1'-x_2'$	Kf_3	$Kf_{0.7}$
100	0.04	1.11	−1.03	−0.15	−0.88	−1.229	−0.364
70	0.12	0.39	0.37	0.17	0.20	−0.323	−0.068

E. F. L=36.0

* * * 1=45.989

* * * 1^*=45.989*=45.589+0.400



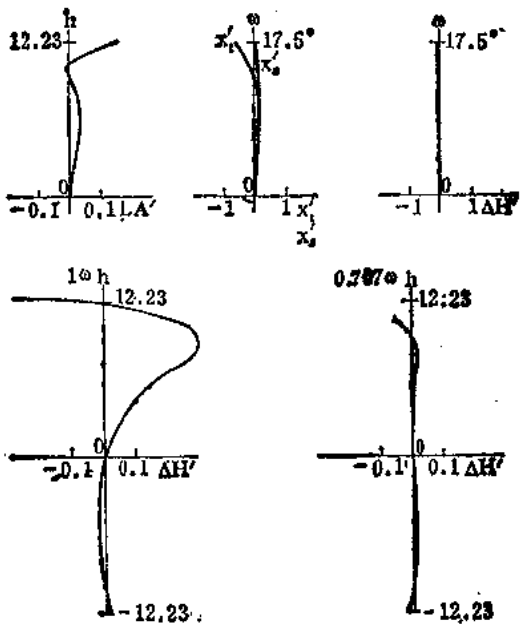
PDF 文件以 "PDF 制作工厂" 试用版创建 http://www.fineprint.com

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.019	0.023	0.014	0.018	−0.005	21.5	−0.3%
h或ω%	LA′	ΔH′	x_1'	x_2'	$x_1'-x_2'$	Kf_1	$Kf_{0.7}$
100	0.150	−0.07	−0.72	−0.07	−0.65	1.260	−0.154
70	0.019	−0.01	0.10	0.11	−0.01	0.447	−0.010

E. F. L = 68.5

* * * 1 = 0.782

* * * 1* = 0.782* = 0.382 + 0.400



PDF 文件以 "PDF 制作工厂" 试用版创建 http://www.fineprint.com

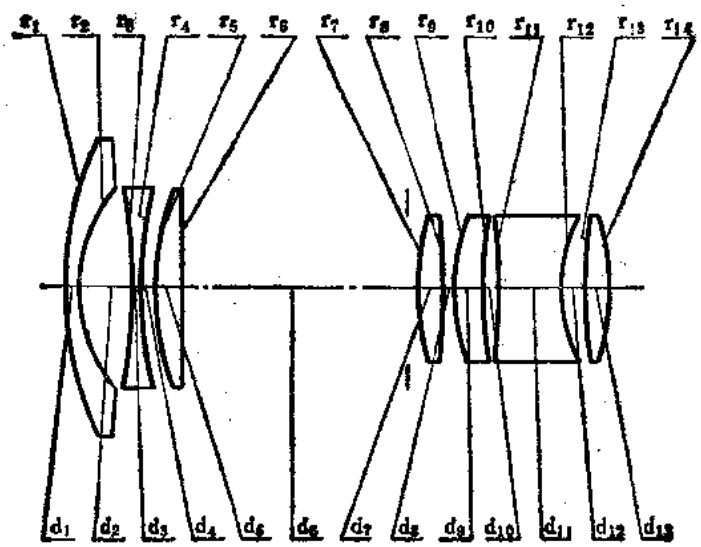
编号：09-03-045

广 角 变 焦 距 物 镜

E. F. L＝36.0～68.5　　B. F. L＝44.60～65.58　　FNo. ＝2.9

F. A. ＝±32.3°～±17.5°

序　号	r	d	n	ν
1	71.093	1.98	1.75700	47.9
2	28.420	9.85		
3	－119.378	1.40	1.69350	50.8
4	79.402	3.21		
5	54.563	4.99	1.77551	37.8
6	－1111.494	＊＊＊1＊		
7	52.129	5.00	1.72600	53.6
8	－187.526	2.00		
9	35.850	6.41	1.79500	45.2
10	83.058	2.59		
11	－122.606	13.33	1.80518	25.4
12	26.523	3.78		
13	101.957	3.80	1.75700	47.9
14	－47.120			



PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

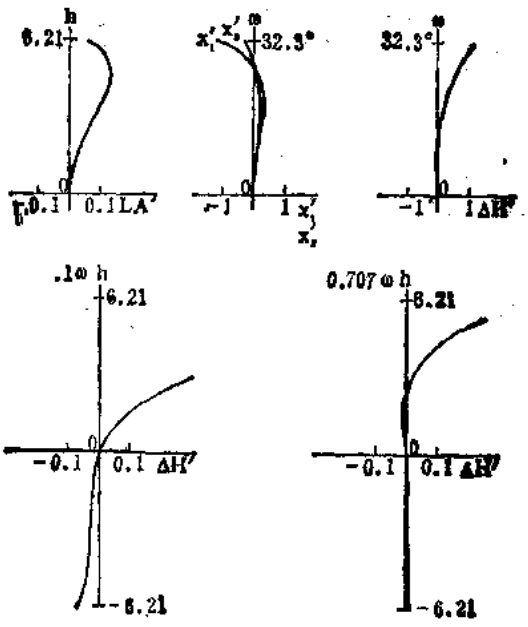
09-03-045-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	Hi	QP(1ω)
	0.023	0.029	0.040	0.014	0.555	22.7	4.6%
h或ω%	LA'	ΔH'	x_i	x_i'	$x_i'-x_i$	K_{f1}	$K_{f0.7}$
100	0.07	1.05	-1.37	-0.26	-1.11	-1.105	-0.340
70	0.12	0.38	0.30	0.13	0.17	-0.285	-0.063

E. F. L = 36.0

* * * 1 = 47.085

* * * 1* = 47.085* = 46.685 + 0.400



PDF 文件以 "PDF 制作工厂" 试用版创建 http://www.fineprint.com

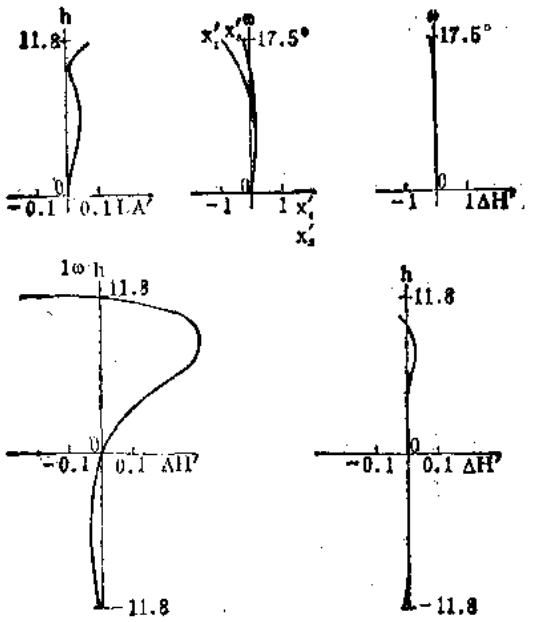
09-03-045-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.018	0.016	0.010	0.013	-0.017	21.5	-0.5%
h 或 ω %	LA′	ΔH′	x_1'	x_2'	$x_1'-x_2'$	K_{f1}	$K_{f0.7}$
100	0.07	-0.11	-1.02	-0.21	-0.81	0.684	-0.150
70	0.03	-0.02	-0.01	0.05	-0.06	0.276	-0.017

E F L=68.5

* * * I = 0.784

* * * 1^{ω} = 0.784^{ω} = 0.384 + 0.400



PDF 文件以 "PDF 制作工厂" 试用版创建 http://www.fineprint.com

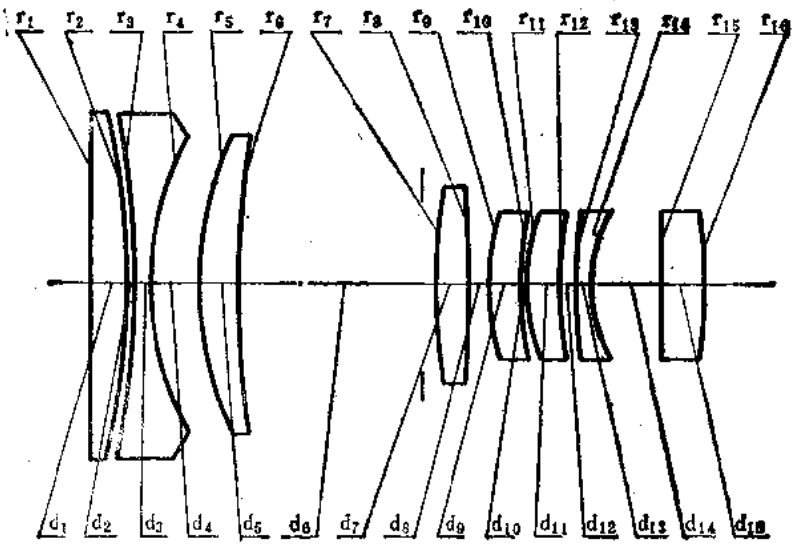
编号: 09-03-046

准广角小型标准变焦距物镜

E. F. L＝41.0～58.2　　B. F. L＝37.68～46.79　　FNo. ＝2.8

F. A. ＝±28.5°～±20.3°

序　号	r	d	n	v
1	1430.844	3.42	1.68250	44.7
2	－78.000	0.18		
3	－90.880	1.46	1.83481	42.7
4	27.915	4.91		
5	33.881	3.48	1.69895	30.1
6	107.950	＊＊＊1＊		
7	57.855	3.23	1.81600	46.6
8	－212.500	2.11		
9	23.205	2.84	1.81544	44.4
10	34.500	0.10		
11	19.350	3.54	1.64000	60.1
12	38.667	1.38		
13	60.350	1.30	1.84666	23.9
14	14.400	6.84		
15	－13639.246	3.96	1.88300	40.8
16	－56.177			



PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

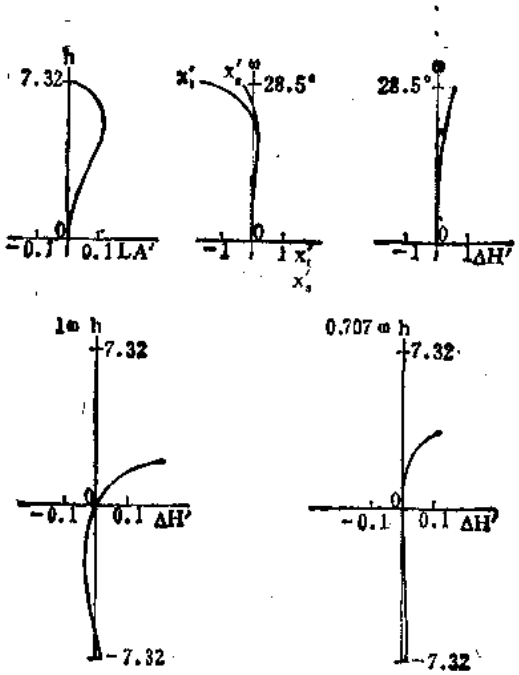
09-03-046-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1∞)
	0.023	0.032	0.032	0.045	0.354	22.2	2.7%
h 或 ω%	LA′	ΔH′	x_i'	x_s'	$x_i' - x_s'$	K_{f1}'	$K_{f0.7}'$
100	0.01	0.60	−1.87	−0.36	−1.51	13.441	−1.192
70	0.11	0.24	0.18	0.19	−0.01	−1.160	−0.232

E. F. L = 41.0

* * * 1 = 21.78

* * * 1^{ω} = 21.78^{ω} = 21.45 + 0.33



PDF 文件以 "PDF 制作工厂" 试用版创建 http://www.fineprint.com

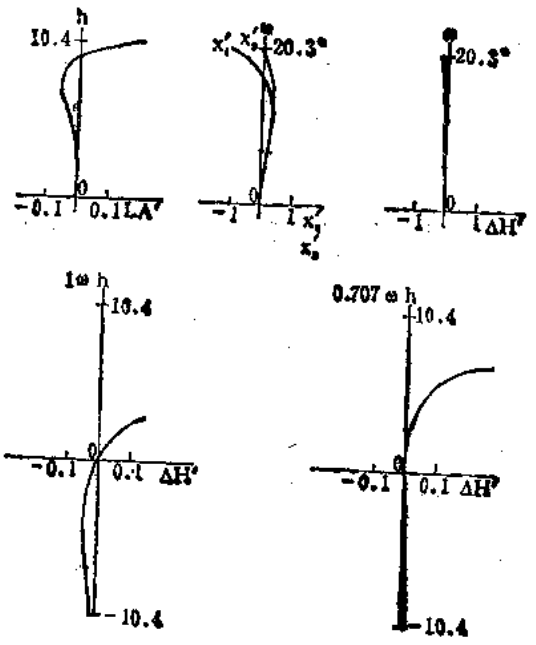
09-03-046-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_6	HI	QP(1ω)
	-0.001	0.020	0.020	0.042	-0.023	21.51	-0.9%
h 或 ω %	LA′	ΔH′	x_1'	x_2'	$x_1'-x_2'$	K_{f1}	$K_{f0.7}$
100	0.21	-0.20	-1.30	-0.15	-1.15	-0.483	-0.795
70	-0.05	-0.04	0.19	0.22	-0.03	-0.170	-0.144

E. F. L = 58.2

* * *1 = 1.33

* * *1* = 1.33* = 1.00 + 0.33



PDF 文件以 "PDF 制作工厂" 试用版创建 http://www.fineprint.com

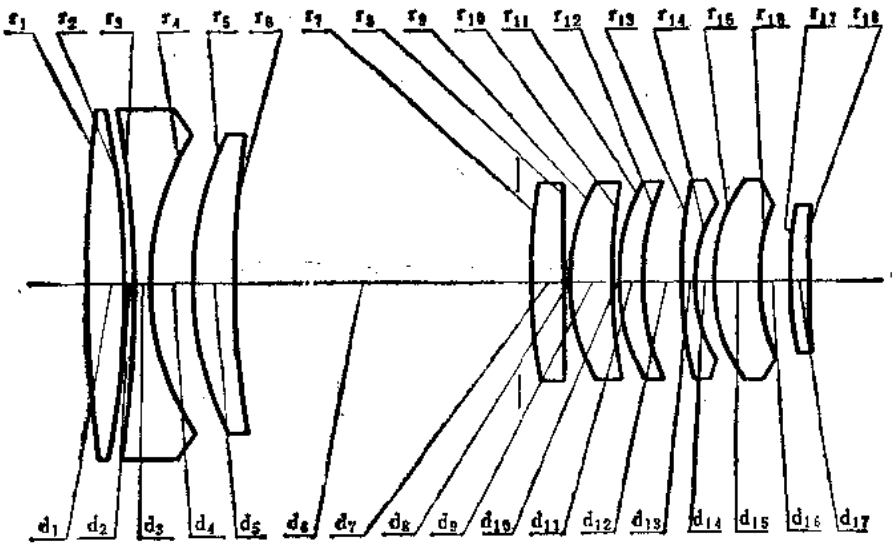
编号：09-03-047

准广角小型标准变焦距物镜

E. F. L＝41～68　　B. F. L＝37.16～51.22　　FNo. ＝2.8～3.6

F. A. ＝±25°**～±15.2°**

序　号	r	d	n	v
1	238.573	4.10	1.46450	66.0
2	－88.800	0.68		
3	－123.000	1.30	1.88300	40.8
4	27.832	4.27		
5	33.881	3.88	1.84666	23.9
6	92.741	***1*		
7	56.517	2.71	1.69680	56.5
8	－445.920	0.10		
9	19.465	3.95	1.64000	60.1
10	54.490	0.10		
11	19.896	1.81	1.61800	63.4
12	24.750	3.41		
13	45.992	1.26	1.84666	23.9
14	12.000	1.57		
[illegible]	[illegible]	[illegible]		
15	13.703	4.80	1.48749	70.1
16	16.331	2.65		
17	37.468	1.75	1.84666	23.9
18	178.352			



PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

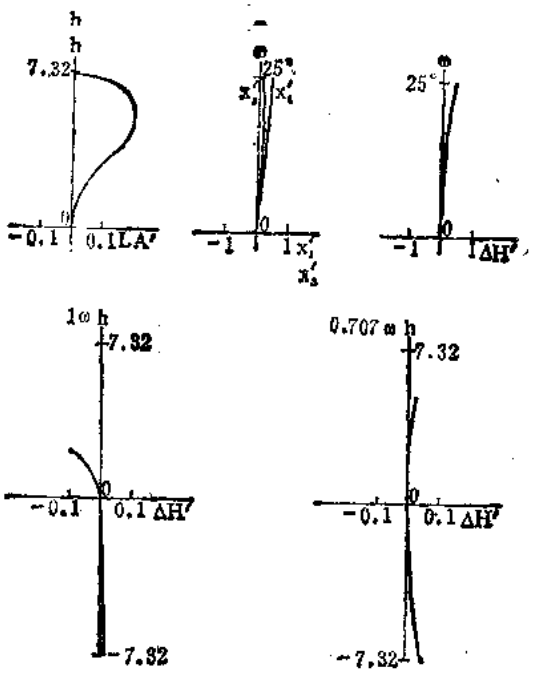
09-03-047-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.039	0.026	0.023	0.034	0.201	19.1	2%
h 或 ω %	LA′	ΔH′	x_i'	x_s'	$x_i' - x_s'$	K_{f_1}	$K_{f_{0.7}}$
100	0.01	0.39	0.41	0.08	0.33	10.96	14.19
70	0.20	0.14	0.29	0.21	0.08	7.28	-0.02

E. F. L = 41

* * * 1 = 30.46

* * * $1^{*} = 30.46^{*} = 30.00 + 0.46$



PDF 文件以 "PDF 制作工厂" 试用版创建 http://www.fineprint.com

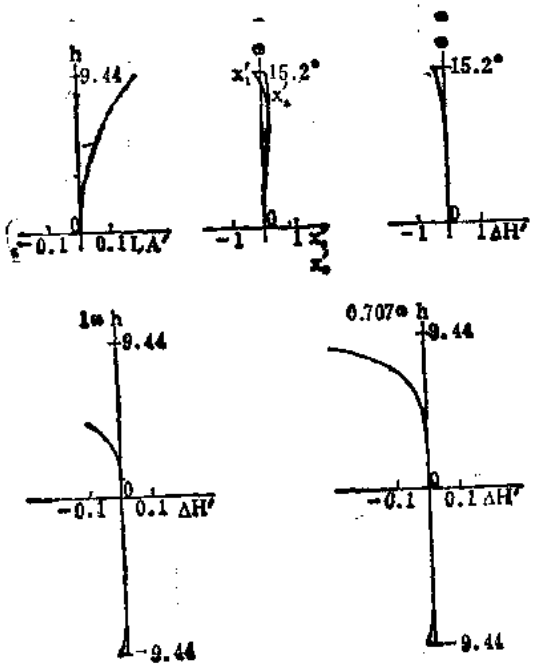
00-00-047-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1∞)
	0.007	0.012	0.006	0.019	-0.069	18.4	-1.5%
h或ω%	LA′	ΔH′	x_1'	x_4'	$x_1'-x_4'$	K_{f1}'	$K_{f0.7}'$
100	0.19	-0.28	-0.18	0.15	-0.34	10.15	1.25
78	0.08	-0.09	0.19	0.20	-0.01	6.92	0.62

E. F. L=68

* * *1=3.17

* * *1*=3.17*=2.71+0.46



PDF 文件以 "PDF 制作工厂" 试用版创建 http://www.fineprint.com

编号：09-03-048

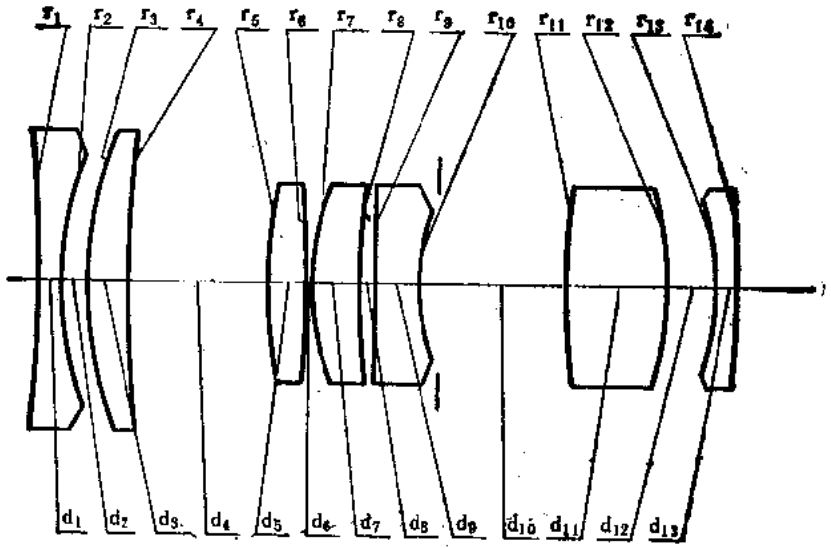
低倍率变焦距摄影物镜

E. F. L＝68～82　　B. F. L＝37.95～44.38　　FNo. ＝3.5

F. A. ＝±17.8°～±14.7°

序　号	r	d	n	ν
1	－212.222	2.20	1.83400	37.2
2	35.862	2.20		
3	39.600	4.00	1.80518	25.4
4	216.000	* * *1		
5	49.138	3.65	1.77250	49.6
6	－152.991	0.10		
7	24.230	5.10	1.72916	54.7
8	81.400	1.26		
9	445.918	4.30	1.80518	25.4
10	19.500	14.67*		
11	88.200	10.77	1.53172	48.9
12	－32.889	5.12		
13	－26.041	2.00	1.48749	70.1
14	－127.275			

14.67* = 4.00 + 10.67

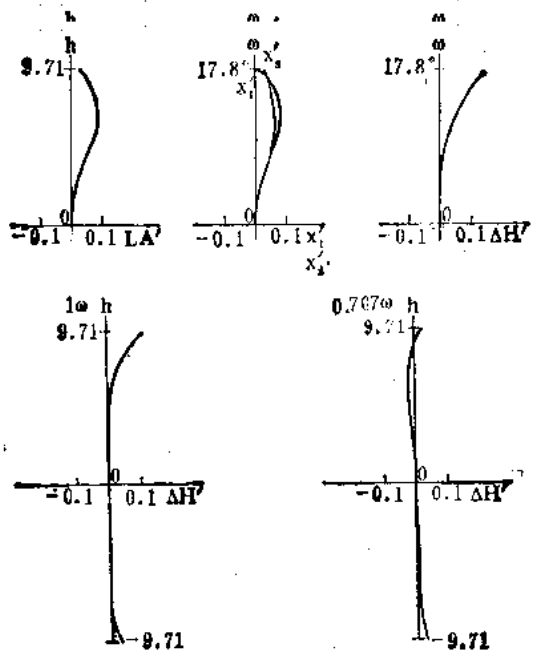


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.0134	0.0060	0.0018	0.0089	0.0338	21.8	0.6%
k 或ω%	LA′	ΔH′	x_1'	x_2'	$x_1'-x_2'$	K_{f_1}'	$K_{f_{0.7}}'$
100	0.03	0.14	0.013	0.031	−0.018	−0.0743	−0.0077
70	0.09	0.04	0.081	0.071	0.010	−0.0271	0.0056

E. F. L = 68

* * * 1 = 14.82



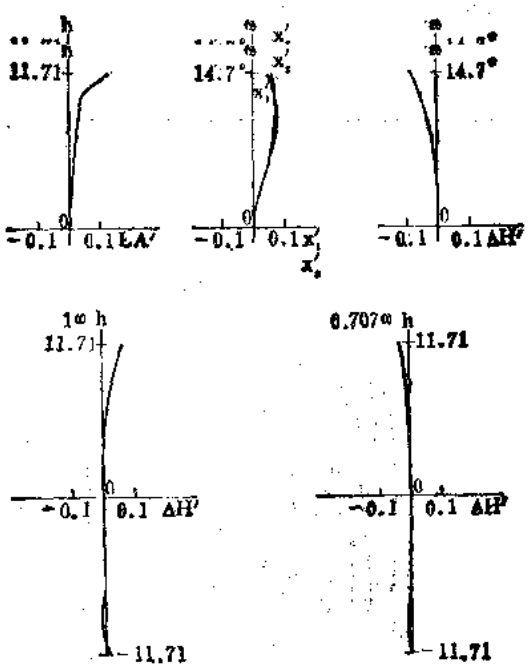
PDF 文件以 "PDF 制作工厂" 试用版创建 http://www.fineprint.com

09-03-048-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1∞)
	0.0073	0.0055	0.0006	0.0087	−0.0324	21.4	−0.4%
h 或 ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
100	0.129	−0.09	0.051	0.065	−0.014	−0.0385	−0.0093
70	0.027	−0.03	0.074	0.073	0.001	0.0108	0.0117

E. F. L = 82

* * * l = 2.45



PDF 文件以 "PDF 制作工厂" 试用版创建 http://www.fineprint.com

编号：09-03-049

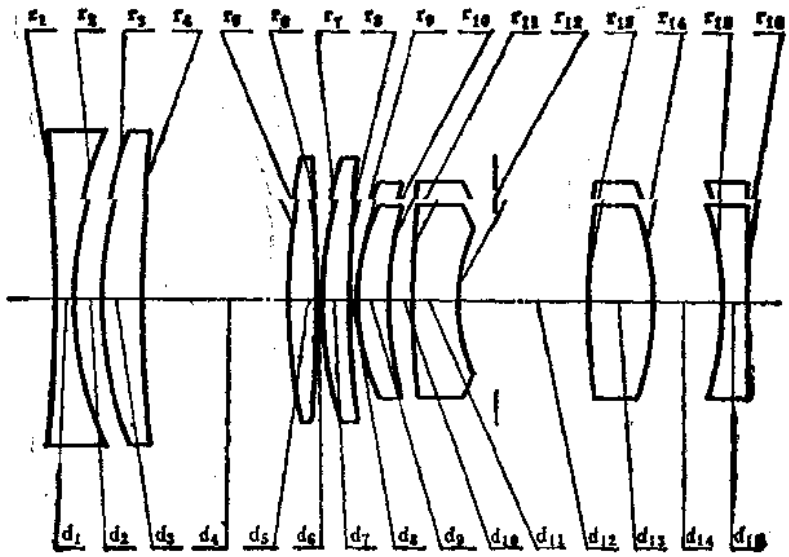
低倍率变焦距摄影物镜

E. F. L＝68～82　　B. F. L＝37.63～44.13　　FNo. ＝3.5

F. A. ＝±17.8°～±14.7°
F. A. ＝±17.8 ～±14.7

序　号	r	d	n	v
1	－273.800	2.00	1.83400	37.0
2	36.395	2.65		
3	40.623	3.85	1.80518	25.4
4	176.080	* * *1		
5	50.078	3.10	1.69680	55.5
6	－268.520	0.10		
7	39.900	2.90	1.64000	60.1
8	144.000	0.10		
9	22.021	3.00	1.62041	60.3
10	35.114	7.54		
11	93.720	4.81	1.80518	25.4
11	93.720	4.81	1.80518	25.4
12	17.494	14.72*		
13	75.123	6.67	1.53172	48.9
14	－31.990	6.93		
15	－33.124	2.00	1.48749	70.1
16	－746.474			

14.72* = 4.00 + 10.72



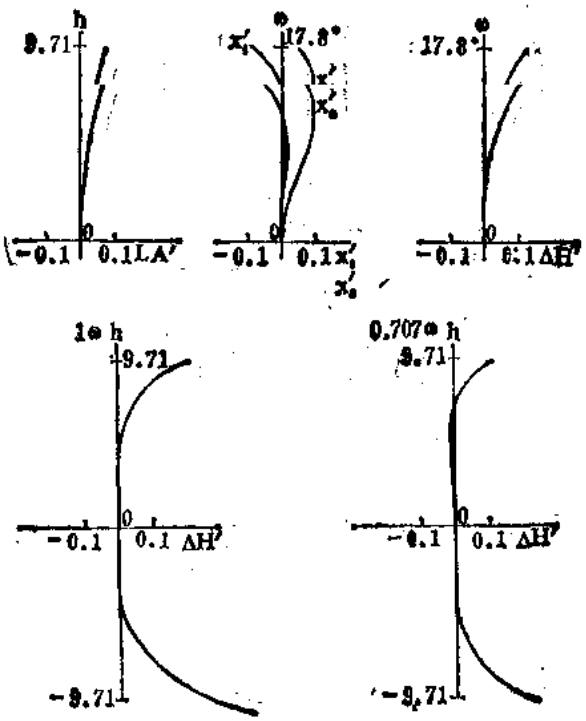
PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

09-08-049-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.0049	0.0106	-0.0025	0.0150	0.0235	21.85	0.6%
b 或 ω %	LA′	ΔH′	x_i'	x_o'	$x_i'-x_o'$	K_{T1}	$K_{T0.7}$
100	0.070	0.13	-0.109	0.045	-0.154	-0.3951	-0.0457
70	0.044	0.03	0.005	0.084	-0.079	-0.1804	-0.0198

E.F.L=68

* * *1=14.40



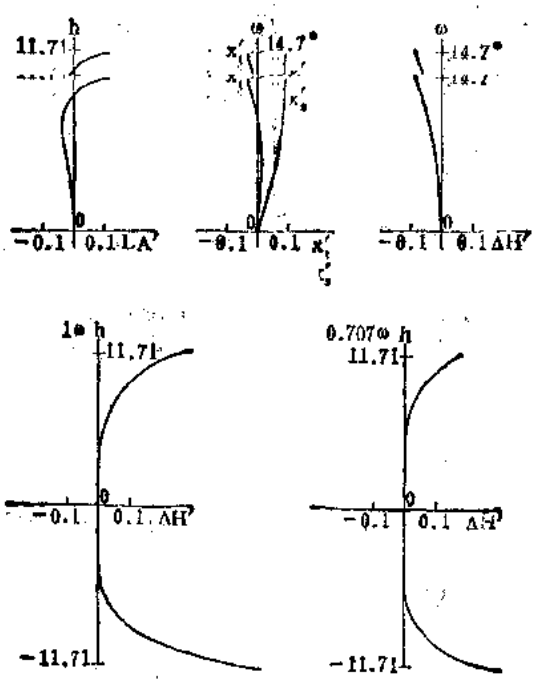
PDF 文件以 "PDF 制作工厂" 试用版创建 http://www.fineprint.com

09-03-049-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	Hf	QP(1ω)
	-0.0042	0.0108	-0.0039	0.0146	-0.0360	21.5	-0.4%
h或ω%	LA′	ΔH′	x_i'	x_4'	$x_i'-x_4'$	K_{f1}	$K_{f0.7}$
100	0.132	-0.09	-0.036	0.089	-0.125	-0.4094	-0.0706
70	-0.041	-0.03	0.001	0.086	-0.085	-0.2479	-0.0311

E. F. L = 82

* * * l = 2.09



PDF 文件以 "PDF 制作工厂" 试用版创建 http://www.fineprint.com

编号：09-03-050

广 角 变 焦 距 物 镜

E. F. L＝1.000～1.889　　B. F. L＝1.1928～1.7513

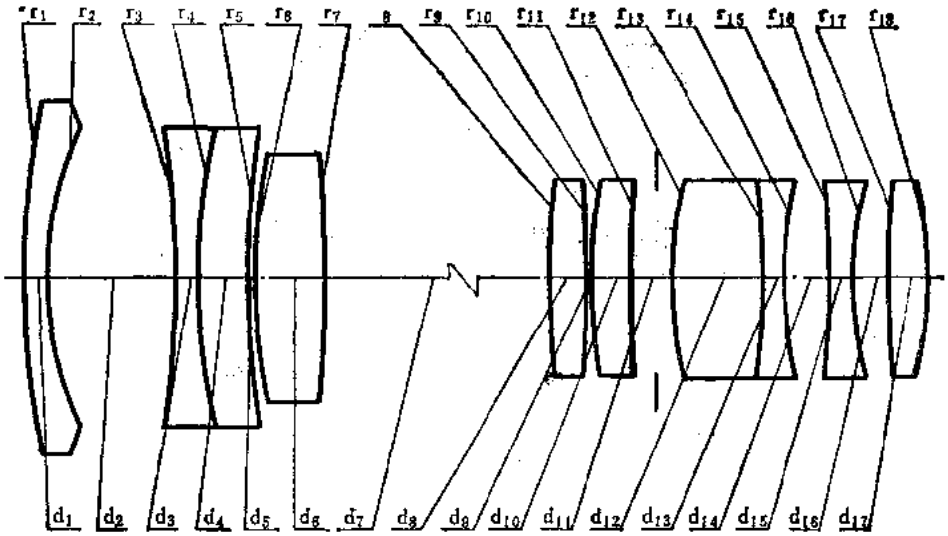
FNo. ＝3.6　　F. A. ＝±31°～±18°

序　号	r	d	n	v
1	1.7267	0.0489	1.64250	58.37
2	0.6651	0.3047		
3	－2.4734	0.0508	1.71300	53.89
4	1.2372	0.1111	1.62041	60.27
5	2.7631	0.0056		
6	1.2479	0.1667	1.58144	40.75
7	－3.7532	* * * 1		
8	2.1897	0.0833	1.61800	63.38
9	－5.2499	0.0042		
10	1.1168	0.0833	1.61800	63.38
11	6.7112	0.0833*		
12	0.7705	0.2083	1.61800	63.38
13	－1.5946	0.0417	1.64769	33.80
14	0.8150	0.1111		
15	－2.0153	0.0417	1.74950	35.19
16	0.7062	0.0722		
17	2.3254	0.0833	1.61659	36.63
18	－0.8274			

0.0833* = 0.042＋0.0413

E. F. L＝1.3744

* * * 1＝0.52775



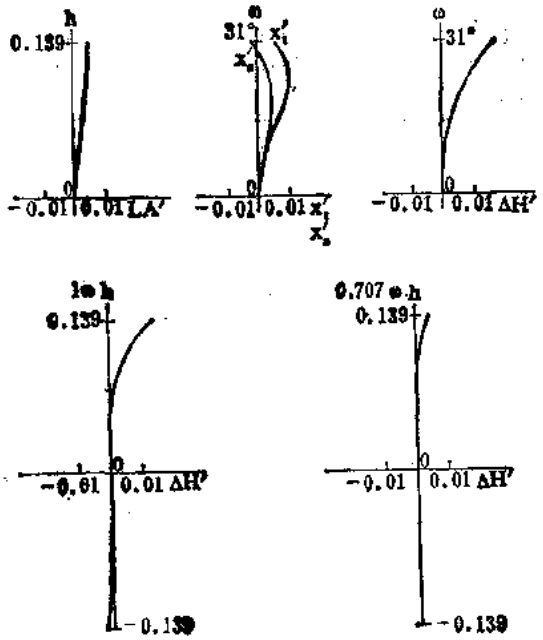
PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

09-03-050-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	Hi	QP(1ω)
	0.00035	0.00034	0.00049	0.00029	0.00778	0.6	2.9%
h 或 ω %	LA′	ΔH′	x_i'	x_a'	$\sum x_i' - x_a'$	K_{f1}	$K_{f0.7}$
100	0.0058	0.017	0.0072	−0.0016	0.0088	−0.0056	−0.0014
70	0.0038	0.006	0.0118	0.0046	0.0078	−0.0021	−0.0001

E. F. L = 1.000

* * * 1 = 1.23364



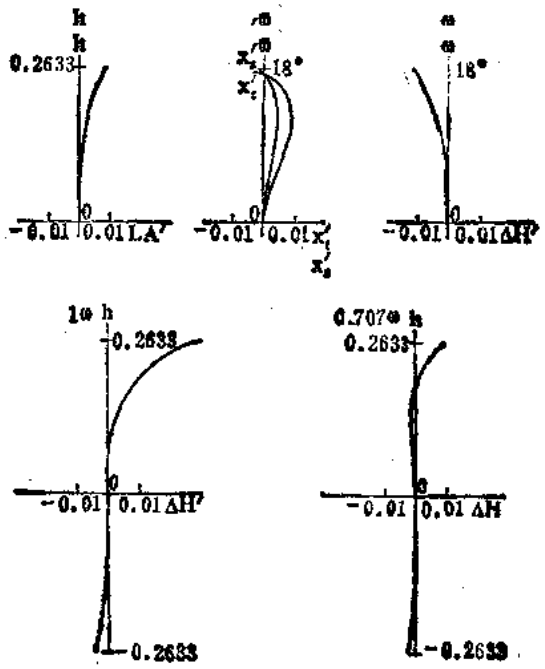
PDF 文件以 "PDF 制作工厂" 试用版创建 http://www.fineprint.com

09-03-050-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.00022	0.00074	0.00033	0.00030	−0.00282	0.6	−1.9%
h或ω%	LA′	ΔH′	x_1'	x_2'	$x_1'-x_2'$	K_{T_1}	$K_{f_{0.7}}$
100	0.0082	−0.012	−0.0021	−0.0013	−0.0008	−0.0127	−0.0023
70	0.0023	−0.003	0.0083	0.0038	0.0045	−0.0035	0.0001

E. F. L = 1.889

* * * 1 = 0.01414



PDF 文件以 "PDF 制作工厂" 试用版创建 http://www.fineprint.com

编号：09-03-051

广 角 变 焦 距 物 镜

E.F.L＝35.148～69.139　　B.F.L＝46.298～72.857　　FNo.＝3.5

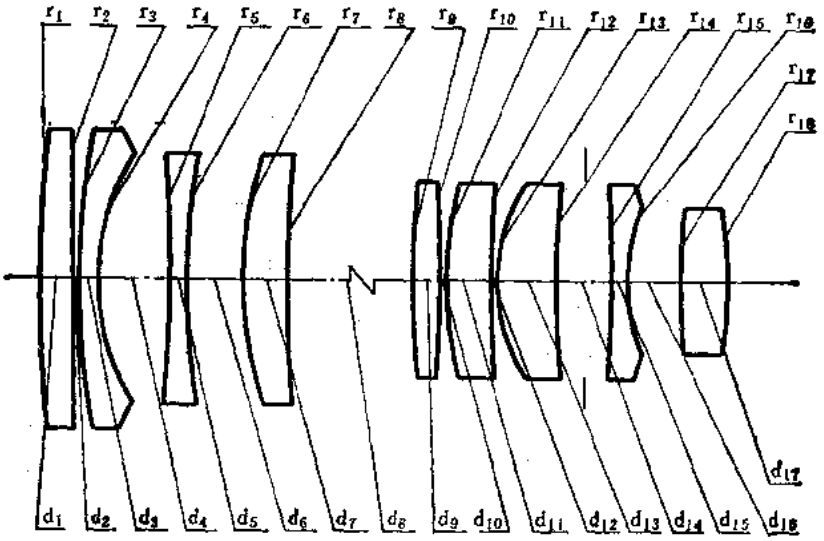
F.A.＝±31°～±16.7°

序　号	r	d	n	ν
1	172.036	3.50	1.62004	36.3
2	∞	0.10		
3	82.224	1.70	1.77250	49.6
4	23.297	7.60		
5	－373.238	1.50	1.77250	49.6
6	69.199	5.50		
7	41.501	4.00	1.62004	36.3
8	251.042	＊＊＊1		
9	100.564	2.60	1.69680	55.5
10	－292.325	0.10		
11	39.613	4.00	1.56883	56.2
12	149.413	0.10		
13	22.672	5.50	1.51633	64.1
14	96.429	5.50*		
15	－341.320	1.60	1.80518	25.4
15	－341.320	1.60	1.80518	25.4
16	19.037	5.00		
17	85.004	4.50	1.62004	36.3
18	－38.022			

5.50* = 2.50 + 3.00

E.F.L＝50.160

＊＊＊1＝13.550



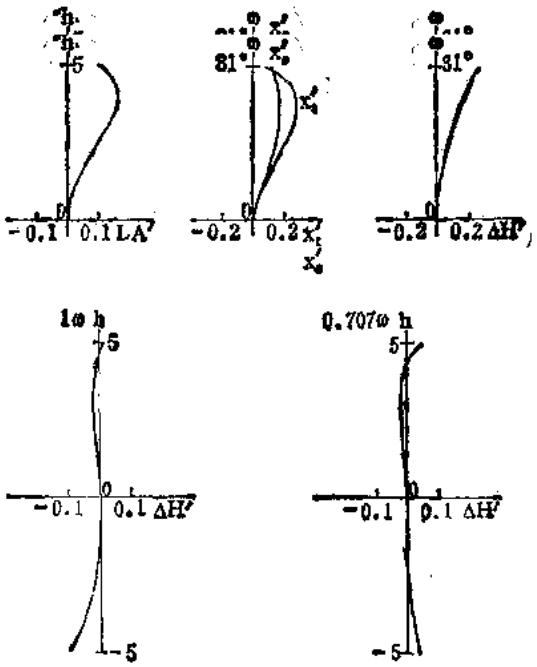
PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

09-03-051-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.0189	-0.0005	0.0047	-0.0233	0.1625	23.1	1.2%
h 或 ω %	LA′	ΔH′	x_i'	x_s'	$x_i'-x_s'$	K_{f1}'	$K_{f0.7}'$
100	0.104	0.27	0.073	0.129	-0.056	0.0368	0.0342
70	0.156	0.13	0.276	0.202	0.074	-0.0435	0.0013

E. F. L = 35.148

* * * I = 33.86



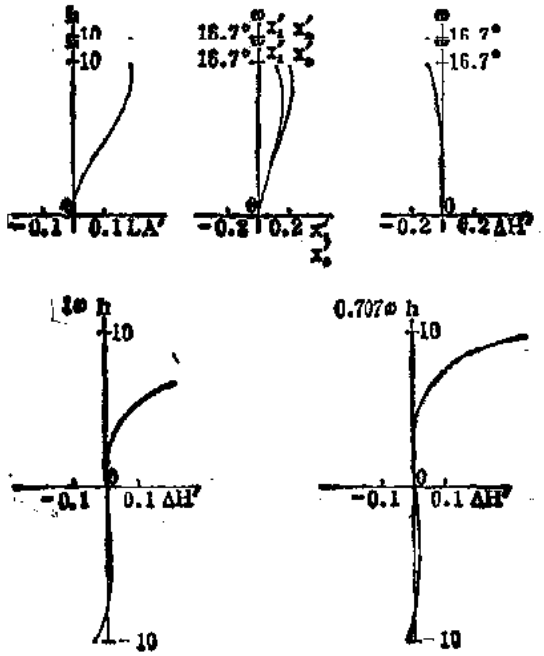
PDF 文件以 "PDF 制作工厂" 试用版创建 http://www.fineprint.com

09-03-051-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.02038	0.00957	−0.00001	0.02317	−0.02331	20.7	−0.4%
h 或 ω %	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K'_{T1}	$K'_{T0.7}$
100	0.190	−0.09	0.117	0.254	−0.137	−0.5559	−0.1182
70	0.171	0.02	0.163	0.198	−0.035	−0.2091	−0.0291

E. F. L = 69.139

* * * 1 = 0.50



PDF 文件以 "PDF 制作工厂" 试用版创建 http://www.fineprint.com

编号：09-03-052

广 角 变 焦 距 物 镜

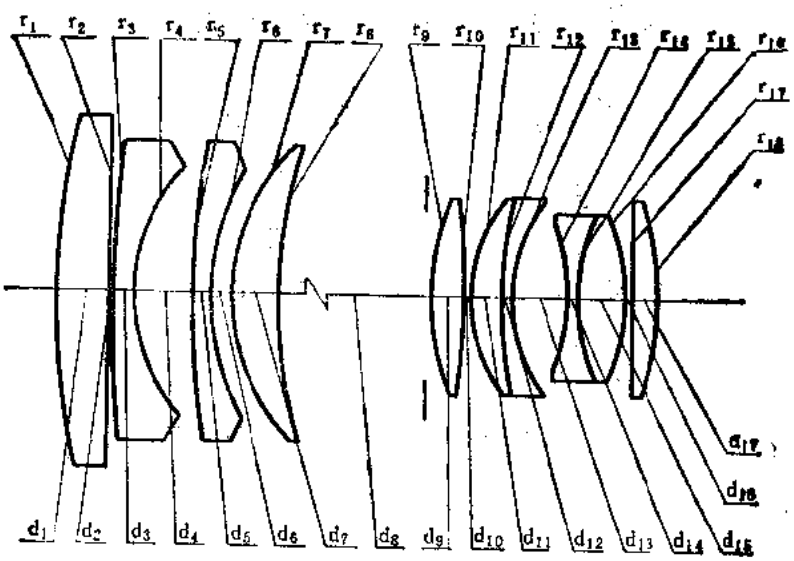
E. F. L＝28.56～48.50　B. F. L＝39.585～54.740　FNo. － 4

F. A. ＝ ±30° **～ ±19° **

序　号	r	d	n	ν
1	73.870	5.00	1.58913	61.1
2	－643.500	0.20		
3	255.000	2.00	1.58913	61.1
4	16.165	6.06		
5	89.250	1.50	1.58913	61.1
6	24.100	2.04		
7	20.130	4.70	1.58144	40.7
8	51.440	* * *1*		
9	26.130	3.30	1.58913	61.1
10	－73.270	0.20		
11	15.810	2.80	1.69680	55.5
12	46.695	1.00	1.58144	40.7
13	14.045	5.47		
14	－18.970	1.00	1.83400	37.2
15	19.755	4.44	1.48749	70.1
15	19.755	4.44	1.48749	70.1
16	－19.755	0.20		
17	∞	2.70	1.80440	39.9
18	－30.390			

E. F. L＝35.00

* * *1＝14.770



PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

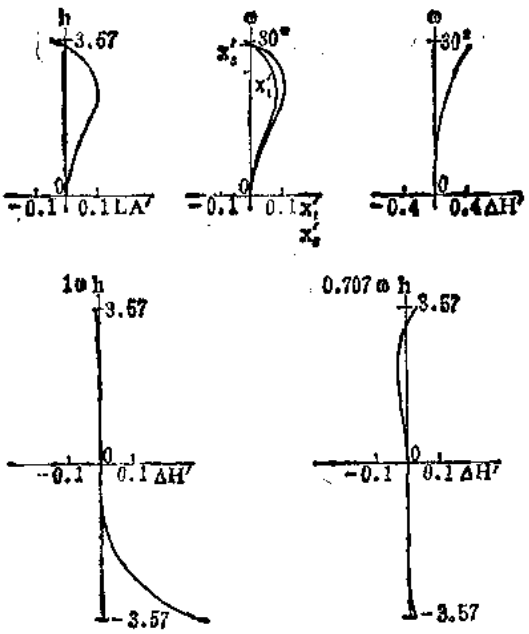
09-03-052-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	Hl	QP(1ω)
	0.0126	0.0012	-0.0068	0.0126	0.1831	16.4	2.7%
h 或 ω %	LA′	ΔH′	x_i'	x_s'	$x_i' - x_s'$	K_{T1}'	$K_{T0.7}'$
100	-0.050	0.45	-0.033	-0.037	0.004	-0.1806	-0.0561
70	0.105	0.18	0.090	0.110	-0.020	-0.0287	0.0107

E. F. L = 28.56

* * * l = 24.055

* * * l^* = 24.055* = 23.055 + 1.000



PDF 文件以 "PDF 制作工厂" 试用版创建 http://www.fineprint.com

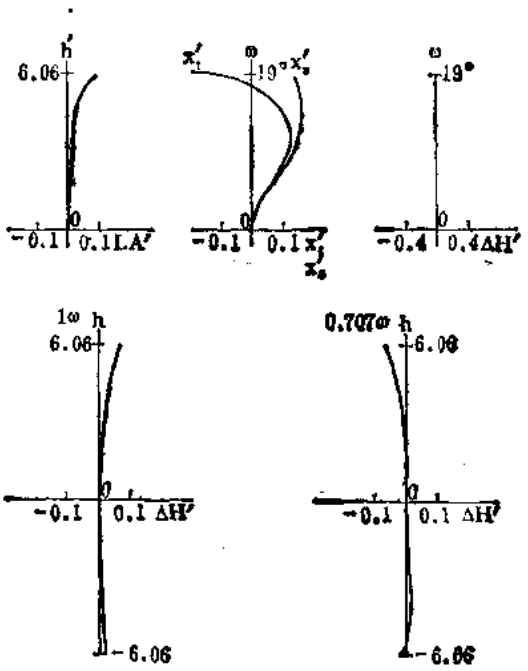
09-03-052-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.0025	0.0042	0.0024	0.0129	0.0115	16.6	-0.01%
h或ω%	LA′	ΔH′	x_i'	x_s'	$x_i' - x_s'$	K_{f1}	$K_{f0.7}$
100	0.079	-0.002	-0.204	0.141	-0.345	-0.0494	-0.0341
70	0.024	0.007	0.124	0.156	-0.032	0.0421	0.0064

E. F. L = 48.50

* * * 1 = 3.308

* * * $1^* = 3.308^* = 2.308 + 1.000$

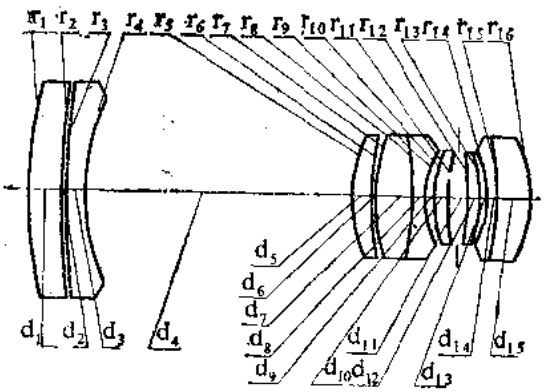


PDF 文件以 "PDF 制作工厂" 试用版创建 http://www.fineprint.com

编号：09-04-053

高分辨能力逆望远型摄影物镜

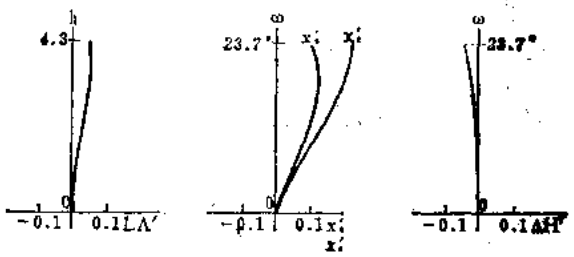
E. F. L＝54.21　　B. F. L＝49.82　　FNo. ＝6.3　　F. A. ＝±23.7°

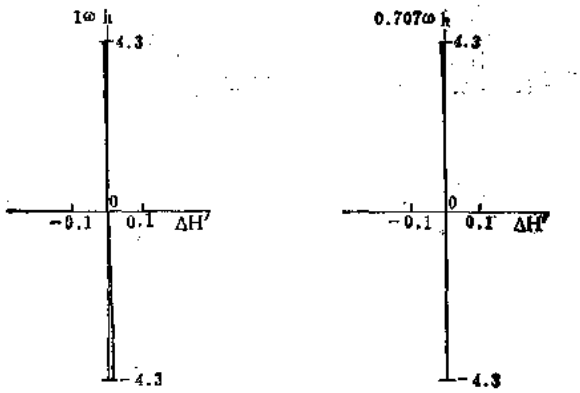


序　号	r	d	n	ν
1	71.79840	5.22359	1.53430	48.9
2	172.72532	1.00000		
3	142.32774	3.00000	1.47236	67.4
4	33.41379	43.96311		
5	21.98667	3.22000	1.72406	42.1
6	48.93517	0.16000		
7	30.49106	5.97000	1.72406	42.1
8	−55.71415	1.87000	1.67766	32.1
9	13.37299	1.35000		
10	20.22197	2.00000	1.64268	44.9
11	34.82607	3.41000*		
12	−52.86381	2.00000	1.64129	55.4
13	−22.21954	1.03000		
14	−14.51473	1.87000	1.67766	32.1
15	−46.60578	5.95000	1.72406	42.1
16	−19.71327			

3.41000* = 1.70000 + 1.71000

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.00184	0.00037	0.00066	0.00463	−0.00334	23.7	−0.1%
h 或 ω %	LA′	ΔH′	x_i'	x_c'	$x_i'-x_c'$	K_{T1}'	$K_{T0.7}'$
h 或 ω %	LA′	ΔH′	x_i'	x_c'	$x_i'-x_c'$	K_{T1}'	$K_{T0.7}'$
100	0.067	−0.039	0.228	0.097	0.131	−0.0011	0.0022
70	0.052	−0.009	0.186	0.126	0.060	0.0019	0.0021



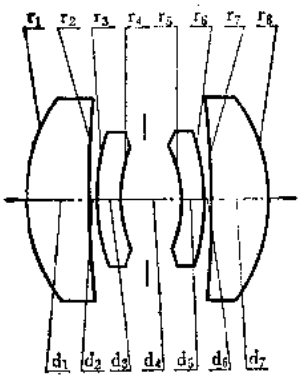


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-04-054

四 片 式 照 相 物 镜

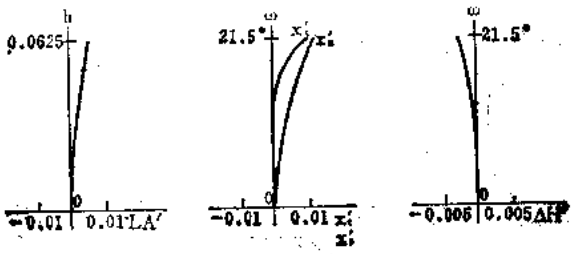
E. F. L = 1　　B. F. L = 0.820　　FNo. = 8　　F. A. = ±21.5°

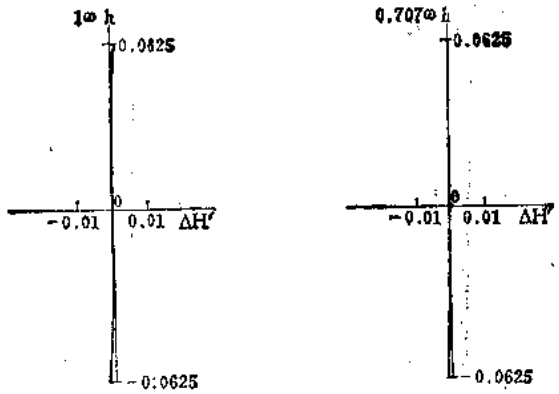


序　号	r	d	n	v
1	0.2414	0.0894	1.491	57.8
2	1.5112	0.0064		
3	0.3117	0.0358	1.568	34.6
4	0.1680	0.0869*		
5	−0.1680	0.0358	1.568	34.6
6	−0.3117	0.0055		
7	−1.5112	0.0894	1.491	57.8
8	−0.2414			

0.0869* = 0.0357 + 0.0512

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.000043	0.000057	−0.000075	0.000184	−0.000396	0.39	−0.6%
h或ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}	$K_{T0.7}$
100	0.0062	−0.0026	0.0103	0.0115	−0.0012	0.00034	0.00006
70	0.0029	−0.0008	0.0008	0.0061	−0.0053	0.00089	0.00034



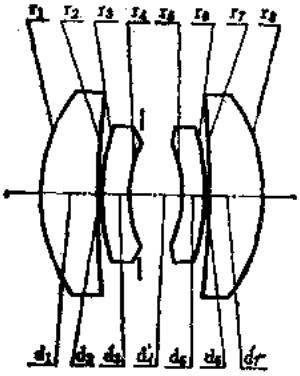


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-04-055

四 片 式 照 相 物 镜

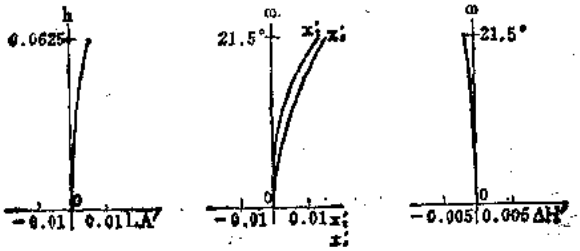
E. F. L= 1　　B. F. L=0.834　　FNo. = 8　　F. A. = ±21.5°

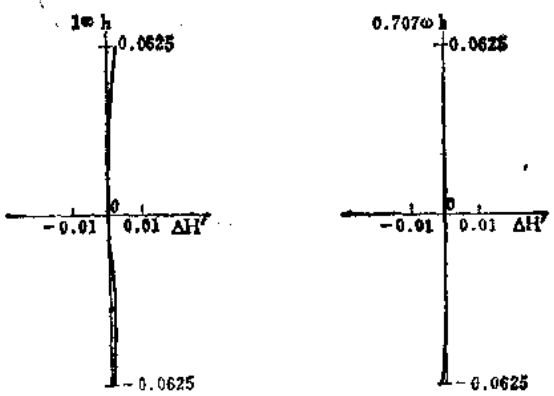


序　号	r	d	n	ν
1	0.2453	0.0894	1.491	57.8
2	1.6903	0.0025		
3	0.3244	0.0366	1.568	34.6
4	0.1722	0.0839*		
5	−0.1722	0.0366	1.568	34.6
6	−0.3244	0.0008		
7	−1.6903	0.0894	1.491	57.8
8	−0.2453			

0.0839* = 0.0179 + 0.066

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.000043	0.000056	−0.000040	0.000194	−0.000255	0.39	−0.5%
h 或 ω %	LA′	ΔH′	x_t'	x_s'	$x_t' - x_s'$	K_{T1}'	$K_{T0.7}'$
100	0.0062	−0.0021	0.0128	0.0149	−0.0021	−0.00096	−0.00053
70	0.0029	−0.0006	0.0052	0.0083	−0.0031	0.00045	0.00014



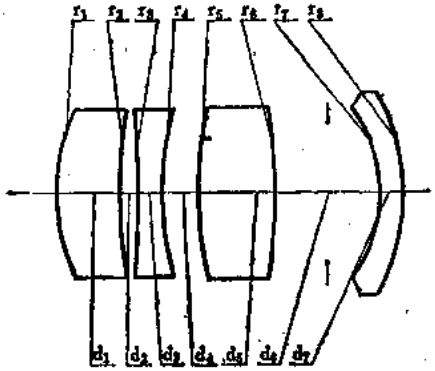


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-04-056

小 型 照 相 物 镜

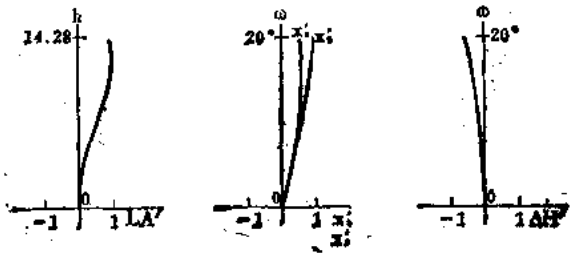
E. F. L＝100　　B. F. L＝48.36　　FNo. ＝3.5　　F. A. ＝ ±20° **

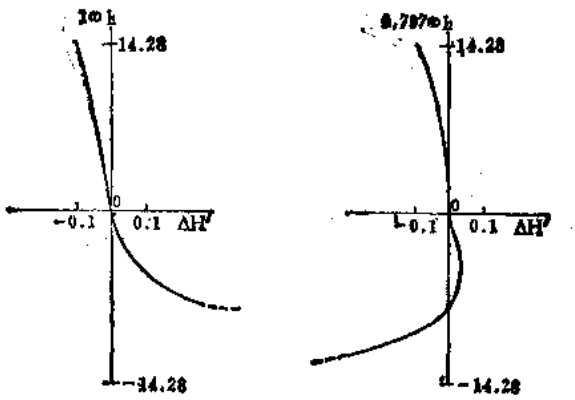


序　号	r	d	n	v
1	28.05	9.12	1.72000	50.25
2	77.488	2.65		
3	－147.238	2.94	1.78472	25.71
4	45.897	5.57		
5	58.624	10.56	1.70154	41.10
6	－77.882	16.49*		
7	－20.018	3.82	1.78590	44.18
8	－29.550			

16.49* = 8.00 + 8.49

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.0796	－0.0416	0.0139	0.0595	－0.2316	36.5	－1.6%
h 或 ω %	LA′	ΔH′	x_1'	x_2'	$x_1'-x_2'$	K_{T1}'	$K_{T0.7}'$
h 或 ω %	LA	ΔH	x_1	x_2	x_1-x_2	K_{T1}	$K_{T0.7}$
100	0.880	－0.591	0.997	0.563	0.434	11.498	－0.824
70	0.766	－0.232	0.664	0.575	0.089	0.373	0.088



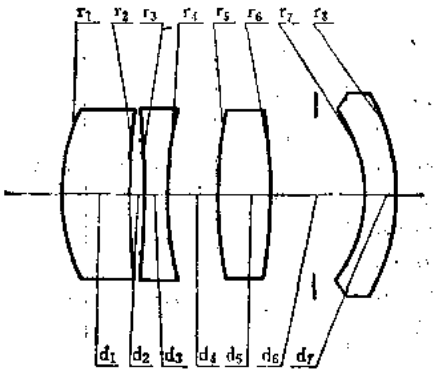


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-04-057

小 型 照 相 物 镜

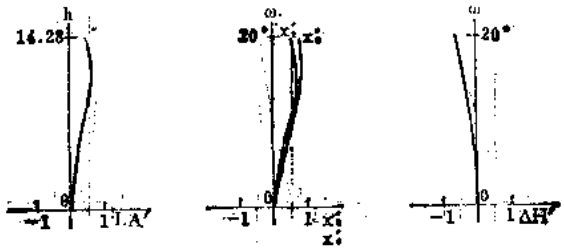
E. F. L＝100　　B. F. L＝47.78　　FNo. ＝3.5　　F. A. ＝±20° **

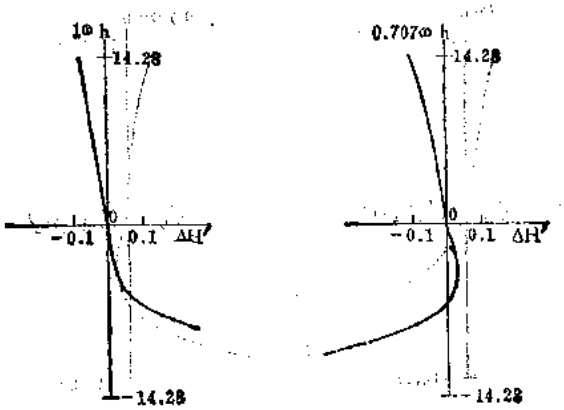


序　号	r	d	n	ν
1	28.109	10.29	1.69100	54.84
2	92.061	2.35		
3	−196.173	2.94	1.78472	25.71
4	52.777	7.59		
5	60.411	8.54	1.60342	38.01
6	−80.771	14.07*		
7	−19.490	4.53	1.74400	44.73
8	−29.810			

14.07* = 6.50 + 7.57

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.0686	−0.0397	0.0192	0.0771	−0.2897	36.5	−1.8%
h 或 ω %	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
h 或 ω %	LA′	ΔH′	x_t	x_s	x_t-x_s	K_{T1}	$K_{T0.7}$
100	0.529	−0.681	0.525	0.810	−0.285	26.018	−1.247
70	0.615	−0.282	0.726	0.773	−0.047	0.172	0.151



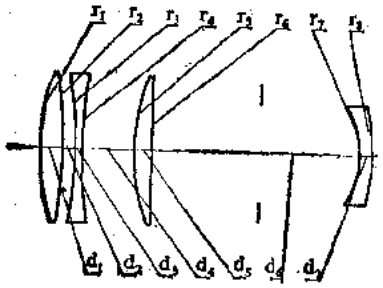


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-04-058

远 摄 照 相 物 镜

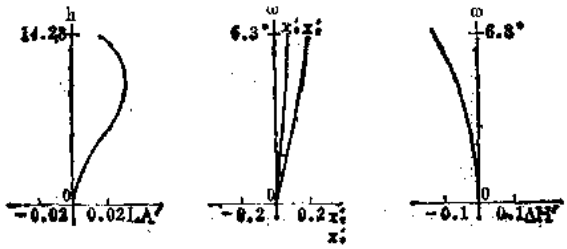
E. F. L＝100　　B. F. L＝27.68　　FNo. ＝3.5　　F. A. ＝±6.3°

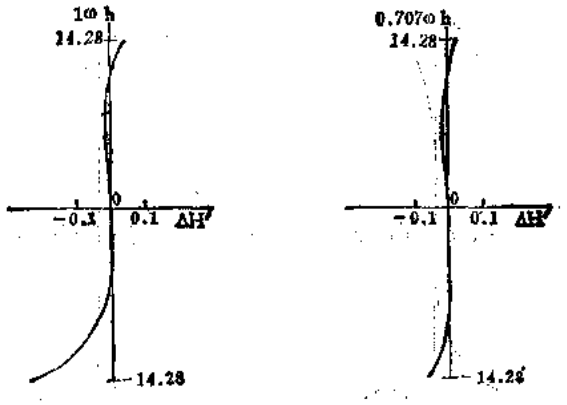


序　号	r	d	n	ν
1	49.692	4.026	1.51633	64.1
2	－111.380	2.226		
3	－74.103	1.282	1.68893	31.1
4	102.736	10.031		
5	41.067	3.569	1.62230	53.2
6	－2355.821	43.231*		
7	－17.489	1.308	1.51633	64.1
8	－34.694			

43.231* ＝22.000＋21.231

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.00506	－0.00532	0.00511	0.00070	－0.03984	11	－1.2%
h 或 ω %	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{f1}	$K_{r0.7}'$
100	0.017	－0.138	0.191	0.108	0.083	0.0960	0.0318
100	0.017	－0.138	0.191	0.108	0.083	0.0960	0.0318
70	0.034	－0.048	0.146	0.062	0.084	0.0165	0.0016



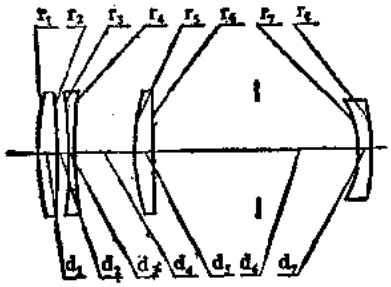


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-04-059

远 摄 照 相 物 镜

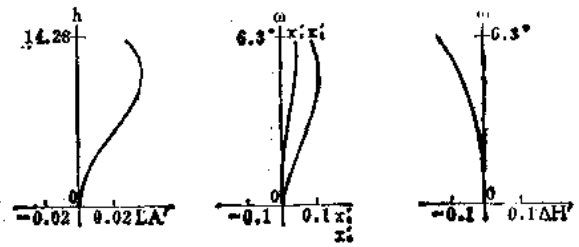
E. F. L＝100　B. F. L＝26.31　FNo. ＝3.5　F. A. ＝±6.3°

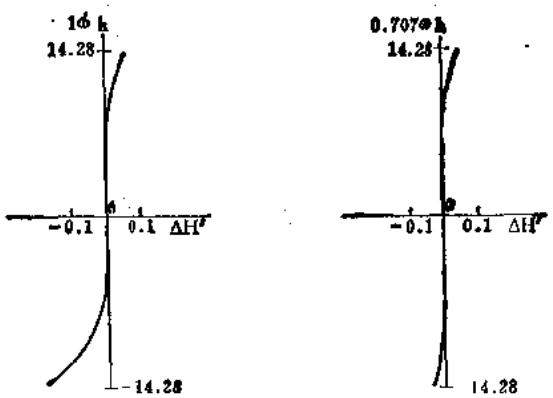


序　号	r	d	n	ν
1	50.198	3.580	1.51633	64.1
2	−135.962	2.731		
3	−81.790	1.048	1.69895	30.1
4	121.817	12.253		
5	40.933	3.443	1.61117	55.9
6	7985.325	43.145*		
7	−17.280	2.621	1.48749	70.1
8	−38.071			

43.145* = 22.000 + 21.145

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.00464	−0.00525	0.00429	−0.00063	−0.04069	11	−1.2%
h 或 ω %	LA′	ΔH′	x′i	x′s	x′i − x′s	K'_{T1}	$K'_{T0.7}$
100	0.029	−0.140	0.096	0.055	0.041	0.0602	0.0227
100	0.029	−0.140	0.096	0.055	0.041	0.0602	0.0227
70	0.035	−0.049	0.100	0.036	0.064	−0.0005	−0.0025



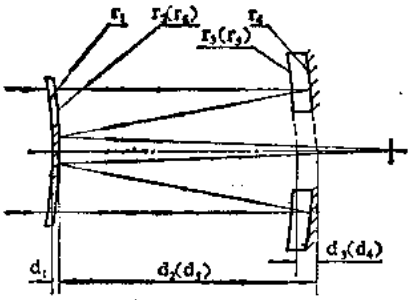


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-04-060

卡塞格林型折反射天体望远镜

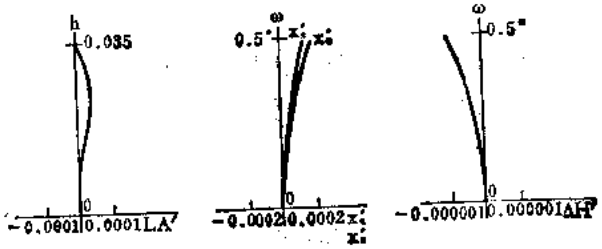
E.F.L＝1　B.F.L＝0.2916　FNo.＝14.3　F.A.＝±0.5°　Lp_0^*＝0

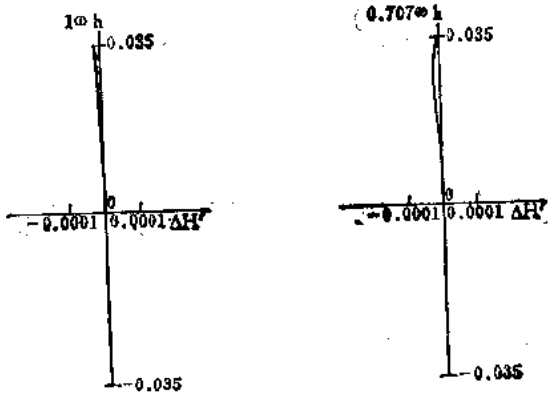


序　号	r	d	n	v
1	－0.185319	0.006619	1.00000	
2	－0.202039	0.188105	1.51633	64.1
3	－0.588701	0.011147	1.00000	
4	－0.543416	－0.011147	1.51633	64.1
5	－0.588701	－0.188105	－1.51633	64.1
6	－0.202039		－1.00000	
7			1.00000	

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	H′	QP(1ω)
	0.00000043	－0.00000008	－0.00000004	0.00000057	－0.00000009	0.008	－0.01%

h 或 ω %	LA′	ΔH′	x_i'	x_0'	$x_i'-x_0'$	K_{T1}'	$K_{T0.7}'$
100	－0.00001	－0.0000012	0.00017	0.00021	－0.00004	－0.000002	－0.0000013
70	0.00004	－0.0000004	0.00008	0.00010	－0.00002	－0.000001	－0.0000009
70	0.00004	－0.0000004	0.00008	0.00010	－0.00002	－0.000001	－0.0000009



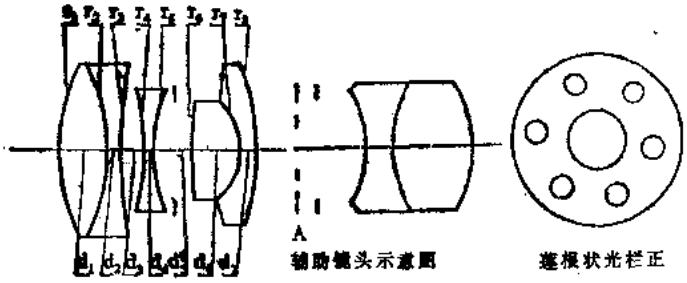


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-04-061

软 焦 点 物 镜

E.F.L＝1　B.F.L＝0.803　FNo.＝4　F.A.＝±16.5°



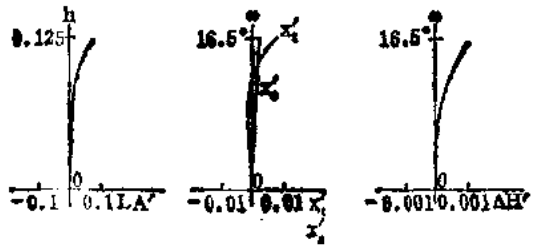
辅助镜头示意图
A—蓬棱状光栏。

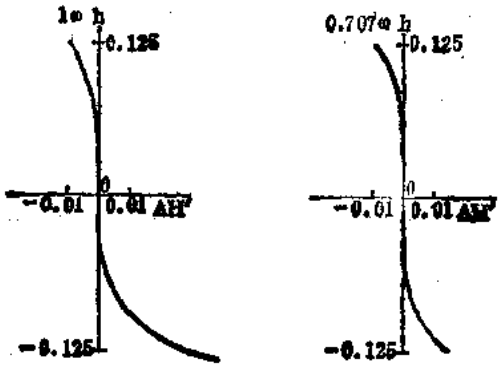
蓬棱状光栏正面示意图

序号	r	d	n	v
1	0.3448	0.0921	1.69350	53.3
2	−0.3448	0.0329	1.60311	60.7
3	1.4619	0.0431		
4	−0.5480	0.0184	1.67270	32.1
5	0.3278	0.0755*		
6	1.2461	0.0951	1.73400	51.5
7	−0.1167	0.0355	1.72000	50.2
8	−0.5678			

0.0755* = 0.0455 + 0.0300

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.00097	−0.00004	−0.00011	0.00025	0.00027	0.29	0.4%
h或ω%	LA′	ΔH′	x'_1	x'_5	$x'_1 - x'_5$	K'_{T_1}	$K'_{T0.7}$
100	0.074	0.0011	0.0070	0.0019	0.0051	−0.0164	−0.0035
100	0.074	0.0011	0.0070	0.0019	0.0051	−0.0164	−0.0035
70	0.020	0.0003	0.0004	0.0015	−0.0011	−0.0045	−0.0011



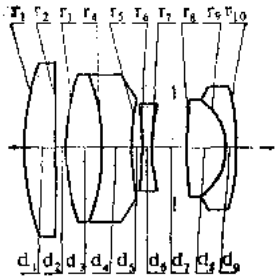


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

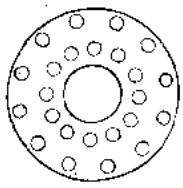
编号：09-04-062

软 焦 点 物 镜

E.F.L＝1　　B.F.L＝0.756　　FNo. ≒ 4　　F.A. ＝±16.5°



辅助镜头示意图
A—遮根状光栏。

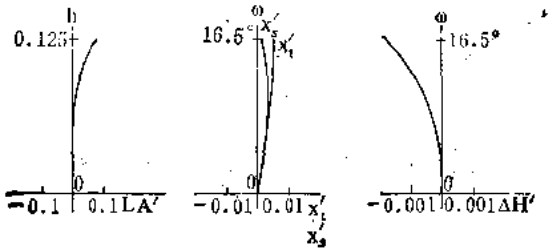


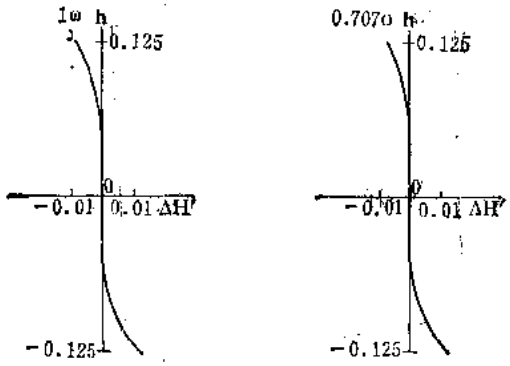
遮根状光栏正面示意图

序号	r	d	n	ν
1	0.5180	0.0660	1.62299	58.2
2	4.3135	0.0228		
3	0.4355	0.0715	1.56883	56.2
4	−0.4355	0.0618	1.51633	64.1
5	0.4737	0.0154		
6	−0.5928	0.0153	1.72151	29.2
7	0.3640	0.0701*		
8	1.3358	0.0838	1.72000	50.2
9	−0.1160	0.0185	1.69350	50.8
10	−0.4867			

0.0701* = 0.0400 + 0.0301

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.000952	−0.000024	−0.000009	0.000262	−0.000627	0.29	−0.7%
h 或 ω %	LA′	ΔH′	x'_t	x'_s	$x'_t - x'_s$	K'_{T1}	$K'_{T0.7}$
h 或 ω %	LA′	ΔH′	x'_t	x'_s	$x'_t - x'_s$	K'_{T1}	$K'_{T0.7}$
100	0.073	−0.0020	0.0052	0.0017	0.0035	−0.0019	−0.0001
70	0.021	−0.0007	0.0028	0.0024	0.0004	−0.0017	−0.0002



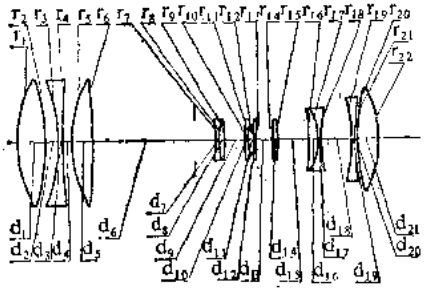


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-04-063

望远比0.37以上总长短的远摄物镜

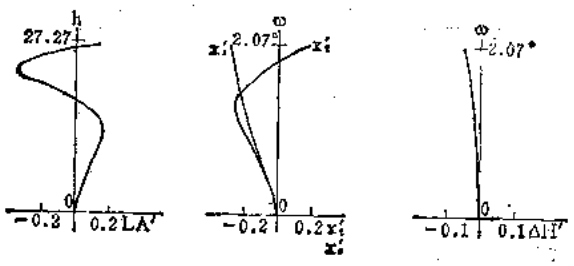
E. F. L＝600　　B. F. L＝51.97　　FNo. ＝11　　F. A. ＝±2.07°

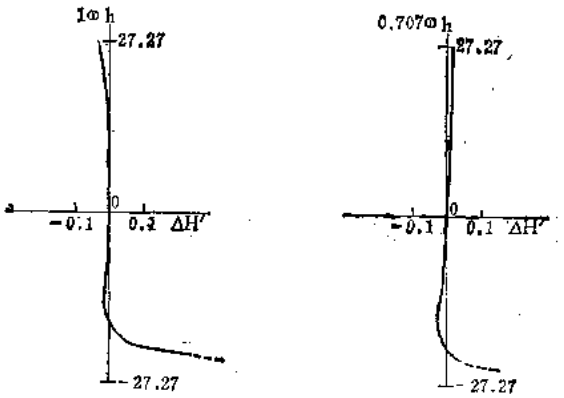


序号	r	d	n	v	序号	r	d	n	v
1	62.17	12.50	1.4339	95.0	12	− 21.34	1.00	1.8620	41.5
2	98.07	7.68			13	−714.10	8.58		
3	− 75.99	2.69	1.7859	44.1	14	158.53	2.00	1.5168	64.0
4	583.30	4.83			15	− 55.27	13.87		
5	59.83	8.35	1.4875	70.1	16	−173.03	3.50	1.5934	34.8
6	− 347.09	60.05*			17	− 18.78	1.10	1.7856	19.9
7	36.48	1.00	1.8010	46.5	18	66.36	15.71		
8	61.80	2.00	1.5934	34.8	19	− 76.54	1.50	1.8380	44.2
9	− 51.24	9.79			20	105.11	0.85		
10	197.33	1.00	1.8380	44.2	21	90.93	9.00	1.5160	56.8
11	15.57	3.50	1.5934	34.8	22	− 24.69			

60.05* = 50.00 + 10.05

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_6	HI	QP(jω)
	.0.0068	−0.0030	−0.0002	−0.0016	0.0057	21.5	−0.2%
h 或 ω%	LA′	ΔH′	x'_t	x'_s	$x'_t - x'_s$	K'_{T1}	$K'_{T0.7}$
100	0.141	−0.062	0.184	−0.312	0.496	−1.296	−0.0055
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
70	− 0.053	−0.026	−0.257	−0.213	−0.044	−0.413	0.0058



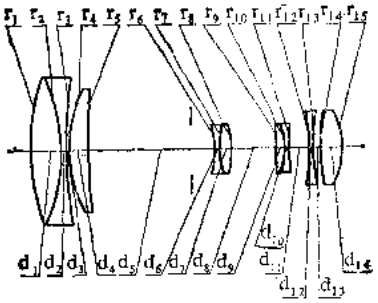


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-04-064

望远比0.54以上总长短的远摄物镜

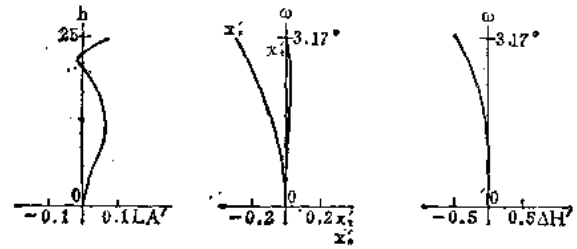
E. F. L＝400　　B. F. L＝92.49　　FNo. ＝ 8　　F. A. ＝ ±3.17°

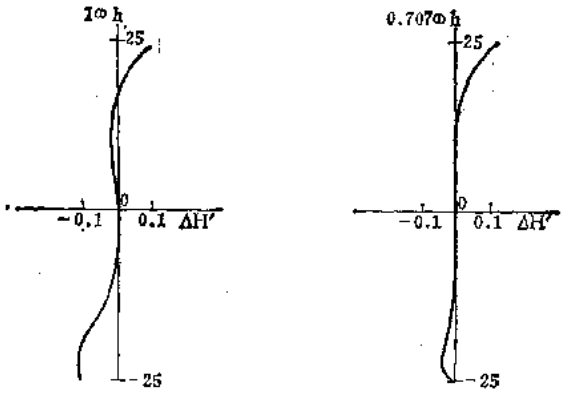


序　号	r	d	n	ν
1	89.97	11.00	1.5173	69.6
2	－61.86	2.50	1.6133	43.8
3	212.81	0.20		
4	47.71	8.00	1.5173	69.6
5	517.30	52.15*		
6	－33.20	1.50	1.8205	43.0
7	25.14	4.00	1.5762	41.4
8	－38.27	18.67		
9	－7075.60	3.50	1.5934	34.8
10	－22.95	1.00	1.7850	49.9
11	71.12	8.44		
12	－90.89	1.50	1.8380	44.2
13	76.67	2.54		
14	83.22	8.00	1.5317	48.9
15	－25.90			

52.15* = 40.00 + 12.15

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	0.0047	0.0021	0.0023	－0.0040	－0.0600	21.9	－2.2%
h 或 ω % h 或 ω %	LA′ LA′	ΔH′ ΔH′	x_t' x_t'	x_s' x_s'	$x_t' - x_s'$ $x_t' - x_s'$	K'_{T_0} K'_{T1}	$K'_{T_{0.7}}$ $K'_{T_{0.7}}$
100	0.072	－0.485	0.005	－0.319	0.324	0.0031	0.0294
70	0.045	－0.171	0.015	－0.144	0.159	－0.0475	0.0061



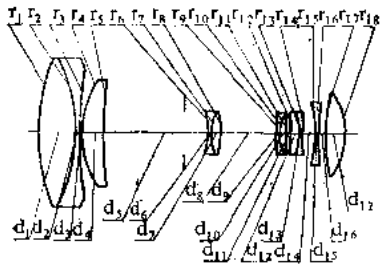


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-04-065

望远比0.47以上总长短的远摄物镜

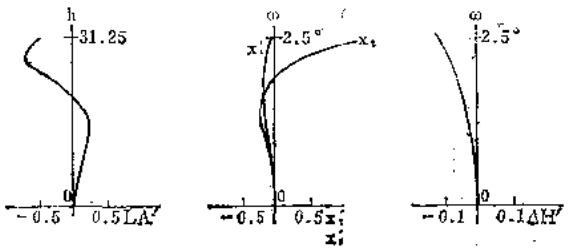
E. F. L＝500　　B. F. L＝84.38　　FNo. ＝ 8　　F. A. ＝ ±2.5°

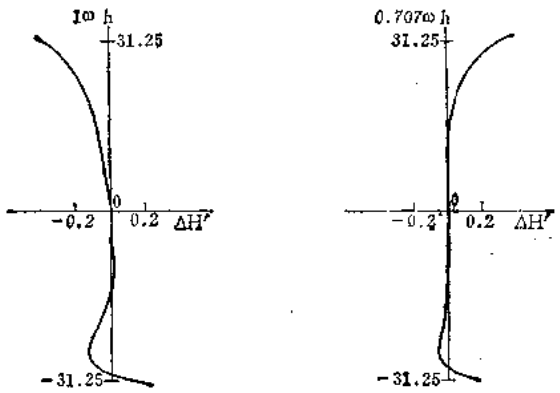


序号	r	d	n	ν	序号	r	d	n	ν
1	91.85	16.00	1.5173	69.6	10	17.29	3.00	1.5762	41.4
2	－65.59	2.50	1.6134	43.8	11	－121.60	1.82		
3	217.08	0.20			12	－280.54	3.70	1.5934	34.8
4	46.39	11.50	1.5173	69.6	13	－22.49	1.00	1.7850	49.9
5	226.91	52.24*			14	99.67	7.00		
6	－32.98	1.50	1.8205	43.0	15	－51.35	1.50	1.8380	44.2
7	24.33	5.26	1.5762	41.4	16	141.00	2.65		
8	－34.72	30.83			17	95.43	8.00	1.5317	48.9
9	164.28	1.50	1.8205	43.0	18	－23.71			

52.24* = 10.00 + 12.24

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.0203	－0.0022	－0.0008	－0.0021	＋0.0268	22	－0.6%
h 或 ω %	LA′	ΔH′	x'_t	x'_s	$x'_t - x'_s$	K'_{T1}	$K'_{T0.7}$
100	－0.533	－0.141	1.275	－0.009	1.284	0.086	－0.1196
70	－0.109	－0.068	－0.178	－0.145	－0.033	－0.279	0.0142



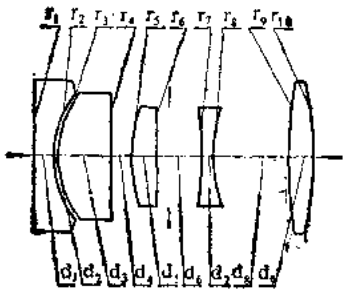


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-04-066

软 焦 点 物 镜

E.F.L＝100　　B.F.L＝75.375　　FNo.＝4　　F.A.＝±12.2°

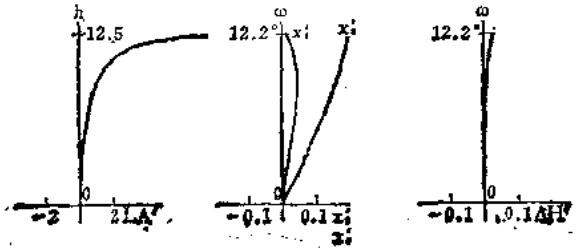


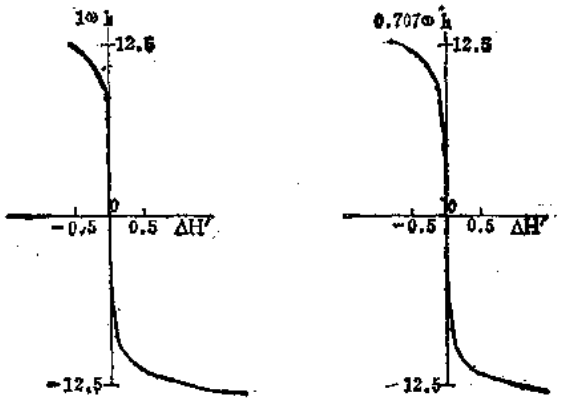
序 号	r	d	n	v
1	1504.977	4.00	1.51633	64.1
2	20.000	0.15		
3	20.000	10.00	1.51633	64.1
4	1169.142	4.00		
5	31.030	4.00	1.72000	50.2
6	1866.694	9.05*		
7	－73.961	1.80	1.69895	30.1
8	28.160	17.39		
9	145.761	4.93	1.72000	50.2
10	－65.108			

9.05*＝2.00＋7.05

注：r_1～r_4是辅助镜头的半径，
r_5～r_{10}是主镜头的半径。

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.0523	0.0051	－0.0036	0.0170	0.0060	21.6	0.1%
h或ω%	LA′	ΔH′	x'_t	x'_s	$x'_t - x'_s$	K'_{T1}	$K'_{T0.7}$
100	8.54	0.032	0.019	0.219	－0.200	－0.649	－0.0369
70	1.17	0.009	0.050	0.160	－0.110	－0.386	－0.0016



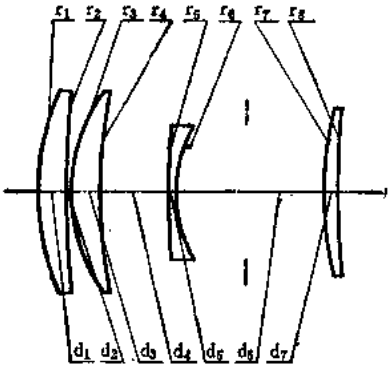


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-04-067

小 型 远 摄 照 相 物 镜

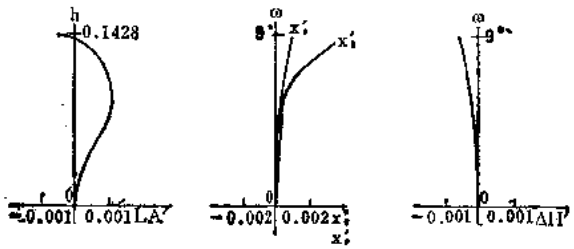
E. F. L＝1　　B. F. L＝0.488　　FNo. ＝3.5　　F. A. ＝ ± 9°

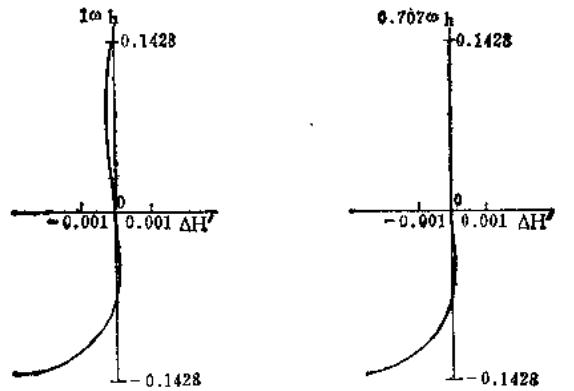


序　号	r	d	n	ν
1	0.3544	0.0407	1.51633	64.1
2	3.8927	0.0074		
3	0.2436	0.0407	1.51633	64.1
4	0.7509	0.1015		
5	4.5009	0.0148	1.76180	27.1
6	0.1776	0.2296*		
7	0.5132	0.0222	1.80518	25.4
8	2.0928			

0.2296* = 0.1000 + 0.1296

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	SS_5	HI	QP(1 ω)
	0.00019	−0.00004	−0.00002	0.00006	−0.00022	0.15	−0.3%
h 或 ω %	LA′	ΔH′	x'_t	x'_s	$x'_t - x'_s$	K'_{T1}	$K'_{T0.7}$
100	−0.0005	−0.0006	0.0036	0.0011	0.0025	0.0014	0.0002
70	0.0012	−0.0002	0.0006	0.0005	0.0001	0.0012	0.0002



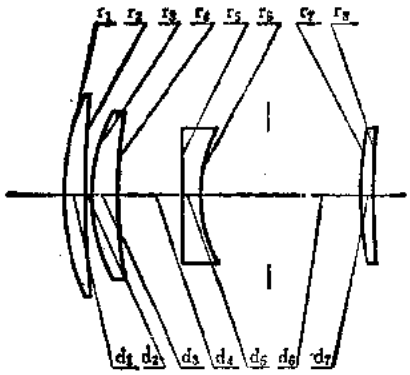


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-04-068

小 型 远 摄 照 相 物 镜

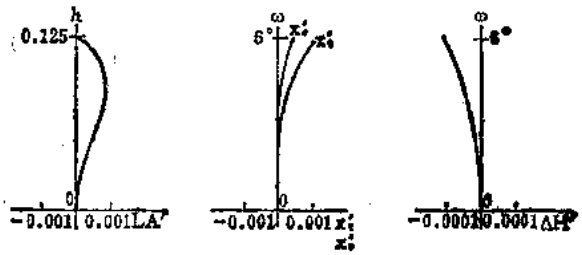
E. F. L＝1　　B. F. L＝0.421　　FNo. ＝ 4　　F. A. ＝ ± 6°

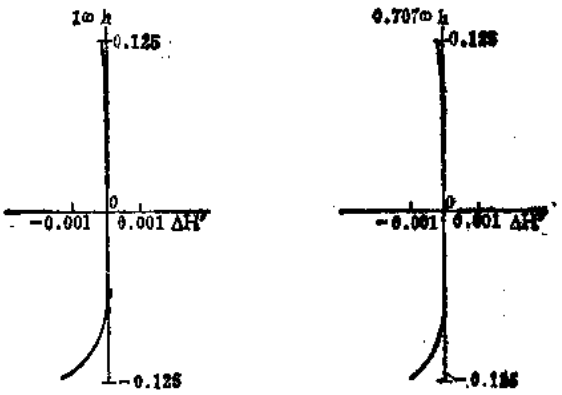


序　号	r	d	n	ν
1	0.3298	0.0350	1.51633	64.1
2	3.2250	0.0100		
3	0.2453	0.0350	1.51633	64.1
4	0.8058	0.1010		
5	∞	0.0230	1.7522	27.6
6	0.1714	0.2365*		
7	0.4785	0.0200	1.80518	25.4
8	1.8215			

0.2365* = 0.1000 + 0.1365

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.000100	−0.000019	−0.000004	0.000013	−0.000037	0.1	−0.1%
h 或 ω %	LA′	ΔH′	x'_t	x'_s	$x'_t - x'_s$	K'_{T1}	$K'_{T0.7}$
100	−0.00006	−0.00012	0.00095	0.00034	0.00061	0.00068	0.00011
70	0.00086	−0.00004	0.00021	0.00015	0.00006	0.00050	0.00007



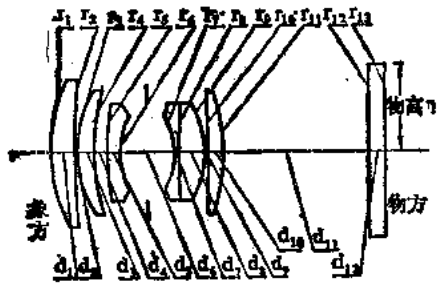


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-04-069

高倍率放大物镜

E. F. L＝100　　B. F. L＝－4.84　　FNo. ＝ 4　　F. A. ＝ ±19.6° **

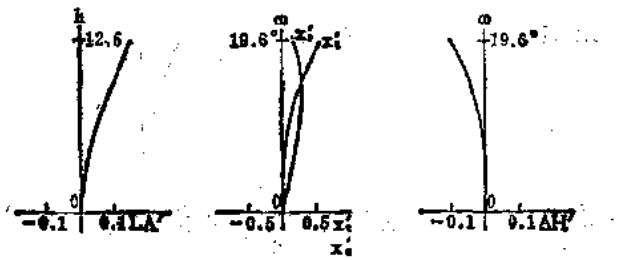


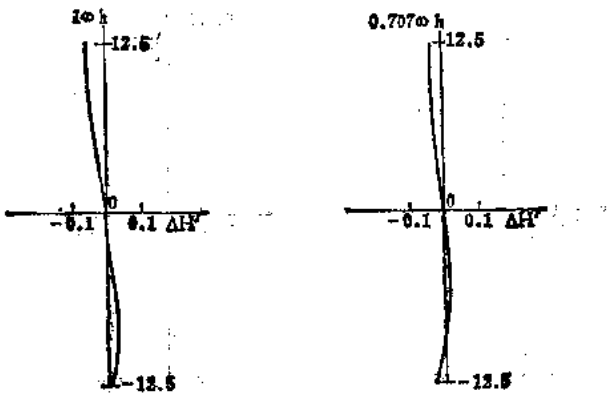
序　号	r	d	n	ν
1	65.434	10.959	1.65160	58.6
2	366.440	0.342		
3	43.950	6.621	1.69350	53.2
4	78.904	4.680		
5	101.599	4.566	1.64769	33.8
6	28.174	22.602*		
7	－27.055	2.283	1.63980	34.5
8	205.480	10.959	1.69100	54.8
9	－37.306	0.342		
10	1589.181	7.078	1.78590	44.2
11	－76.872	68.973		
12	∞	6.849	1.51633	64.1
13	∞			

22.602* = 11.301 + 11.301

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	0.0062	0.0018	－0.0075	0.0320	－0.0200	35.59	－0.2%
h 或 ω %	LA′	ΔH′	x'_t	x'_s	$x'_t - x'_s$	K'_{T1}	$K'_{T0.7}$
100	0.156	－0.099	0.593	0.178	0.415	0.0195	0.0086
70	0.089	－0.027	0.202	0.240	－0.038	0.0232	0.0100
70	0.089	－0.027	0.202	0.240	－0.038	0.0232	0.0100

注：上述象差是由象方到物方，按－∞计算的。其中 r_1 是象方的第一面，r_{13} 是物方的第一面。当倍率为20"、$\eta' = 7.306\,f$ 时，$\eta = 0.3653\,f$。



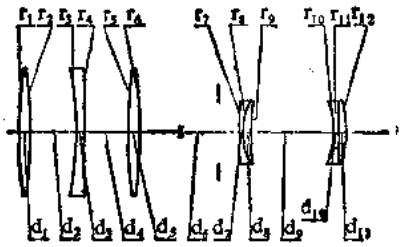


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-04-070

远 摄 照 相 物 镜

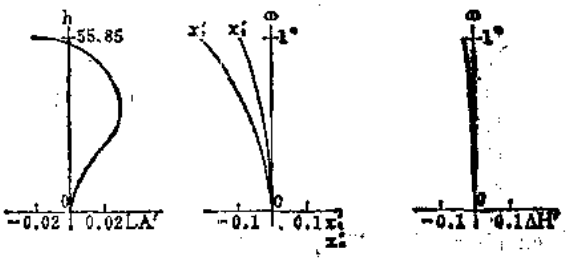
E. F. L＝1228.8　　B. F. L＝172.08　　FNo. ＝11　　F. A. ＝±1°

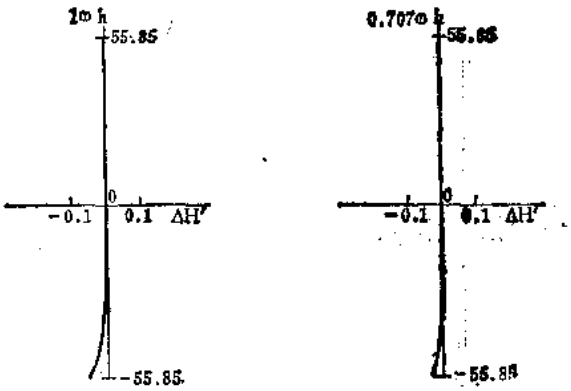


序　号	r	d	n	ν
1	439.63	8.50	1.48749	70.1
2	－466.09	46.18		
3	－326.09	5.00	1.78590	44.2
4	1551.37	44.95		
5	480.78	8.50	1.48749	70.1
6	－487.33	470.14*		
7	565.19	2.50	1.52682	51.1
8	56.08	4.50	1.62230	53.2
9	212.84	87.20		
10	－79.70	3.00	1.78590	44.2
11	－2550.20	5.00	1.74077	27.8
12	－119.75			

$470.14^{*} = 420.00 + 50.14$

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ●)
	0.0006	－0.0004	0.0003	－0.0012	－0.0031	21.3	－0.1%
h 或 ω %	LA′	ΔH′	x'_t	x'_s	$x'_t - x'_s$	K'_{T1}	$K'_{T0.7}$
100	－0.023	－0.034	－0.093	－0.230	0.137	0.0251	0.0050
100	－0.023	－0.034	－0.093	－0.230	0.137	0.0251	0.0050
70	0.033	－0.012	－0.039	－0.119	0.080	0.0122	0.0015



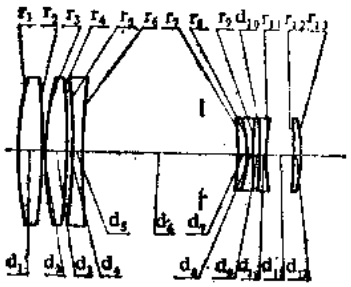


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-04-071

小 型 远 摄 物 镜

E. F. L＝91　　B. F. L＝36.62　　FNo. ＝5.1　　F. A ＝ ±2.06°

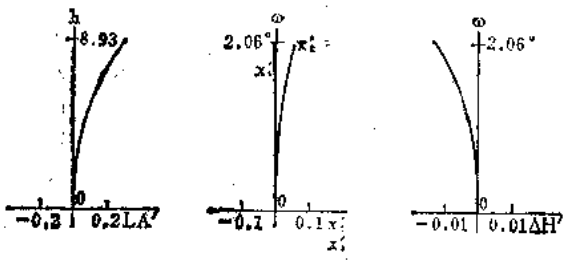


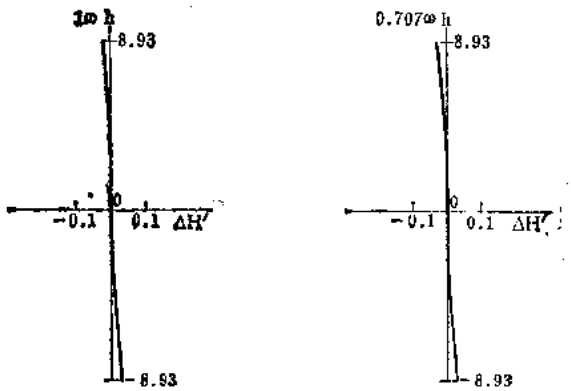
序号	r	d	n	v
1	29.878	2.417	1.50032	81.9
2	-70.540	0.050		
3	28.542	2.350	1.50032	81.9
4	-79.167	0.617		
5	-60.000	0.833	1.74950	35.0
6	74.627	16.255*		
7	-28.578	1.083	1.69895	30.0
8	-11.815	0.383	1.51680	64.2
9	80.378	0.667		
10	-65.000	0.600	1.69680	55.6
11	17.909	2.963		
12	-67.500	0.750	1.57000	70.1
13	-15.961			

16.255* = 12.255 + 4.000

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	Hi	QP(1 ω)
	0.00468	-0.00047	0.00054	-0.00058	-0.00275	3.2	-0.4%
h 或 ω %	LA′	ΔH′	x'_t	x'_s	$x'_t - x'_s$	K'_{T1}	K'_{T0}
100	0.324	-0.014	0.056	-0.002	0.058	-0.0031	-0.0036
100	0.324	-0.014	0.056	-0.002	0.058	-0.0031	-0.0036
70	0.137	-0.004	0.027	-0.001	0.028	-0.0016	-0.0022

注：当 l = -1161.1，n′ = 3.6 时(倍率为 1/10)，d_8 = 17.589，d_{11} = 1.629，此时象差变化不大。



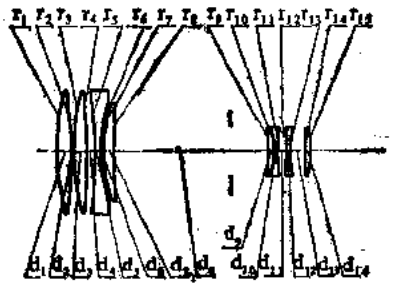


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-04-072

小 型 远 摄 物 镜

E. F. L＝100　　B. F. L＝30.05　　FNo. ＝11　　F. A. ＝±1.03°

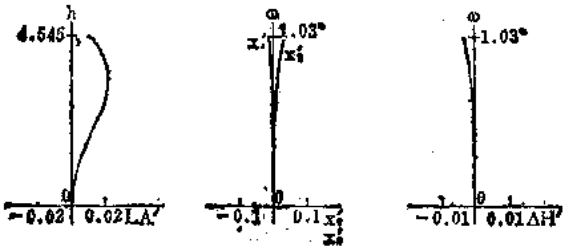


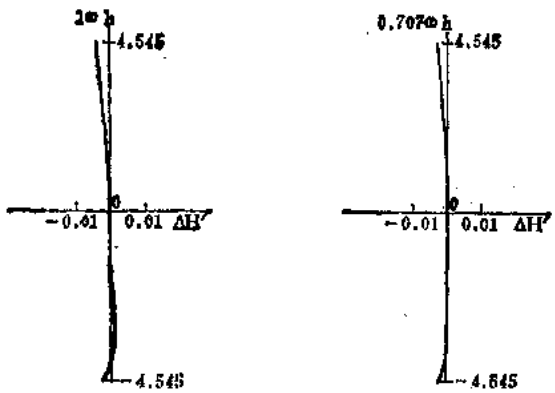
序号	r	d	n	ν
1	22.166	1.125	1.50032	81.9
2	−54.081	0.050		
3	23.236	1.083	1.50032	81.9
4	−87.352	1.062		
5	−46.103	0.450	1.74950	35.0
6	16.515	0.083		
7	15.434	0.667	1.59507	35.6
8	84.450	16.537*		
9	−29.873	0.417	1.69895	30.0
10	−6.813	0.167	1.62041	60.3
11	20.943	1.174		
12	−85.754	0.250	1.69680	55.6
13	13.457	1.316		
14	−61.879	0.333	1.50032	81.9
15	−12.101			

16.537* = 12.537 + 4.000

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1∞)
	0.00032	−0.00001	0.00008	−0.00011	−0.00035	1.8	−0.2%
h 或 ω %	LA′	ΔH′	x'_t	x'_s	$x'_t - x'_s$	K'_{T1}	$K'_{Te\cdot7}$
100	0.013	−0.003	0.031	−0.006	0.039	0.0028	0.0004
70	0.023	−0.001	0.015	−0.004	0.019	0.0020	0.0003

注：当 l ＝ −1089.1，n′ ＝ 1.∞ 时(倍率为 1/10)，d_8 ＝ 17.537，d_{13} ＝ 0.316，此时象差变化不大。



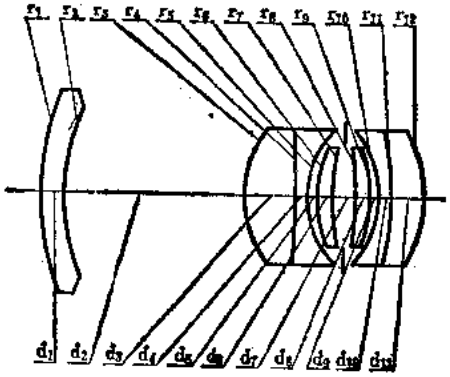


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-04-073

高分辨能力逆望远型摄影物镜

E. F. L＝50　　B. F. L＝42.09　　FNo. ＝5.8　　F. A. ＝±23.7°

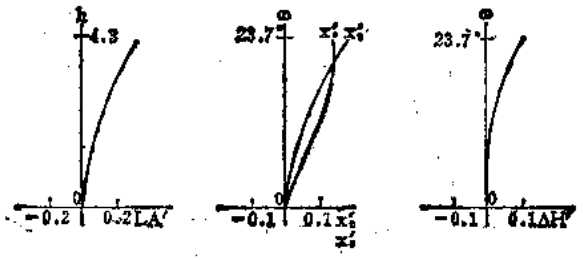


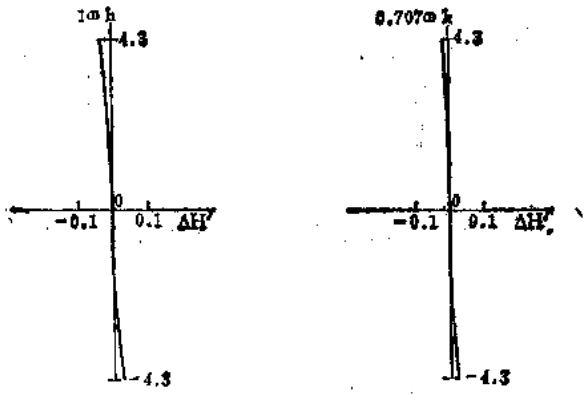
序号	r	d	n	ν
1	39.81860	2.93000	1.43496	95.1
2	27.72016	28.67183		
3	15.78929	7.21800	1.72406	42.1
4	－194.84552	1.76000	1.67766	32.1
5	11.22640	1.40793		
6	17.11056	1.88000	1.64268	44.9
7	34.12903	3.65264*		
8	－47.21002	1.88000	1.64129	55.4
9	－19.75156	0.91800		
10	－12.11672	1.76000	1.67766	32.1
11	－38.42884	4.73934	1.77406	42.4
12	－16.75133			

3.65264* = 1.82632 + 1.82632

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	H	QP(1ω)
	0.0059	－0.0011	－0.0013	0.0076	0.0170	21.9	0.4%
h 或 ω %	LA′	ΔH′	x'_t	x'_s	$x'_t - x'_s$	K'_{T1}	$K'_{T0.7}$
100	0.326	0.092	0.184	0.138	0.046	－0.0082	－0.0038
100	0.326	0.092	0.184	0.138	0.046	－0.0082	－0.0038
70	0.183	0.030	0.105	0.134	－0.029	－0.0078	－0.0045

注：当 n_{12}＝1.72406（ν＝42.1）时，E. F. L＝54.22，B. F. L＝45.54并且象质明显好转。



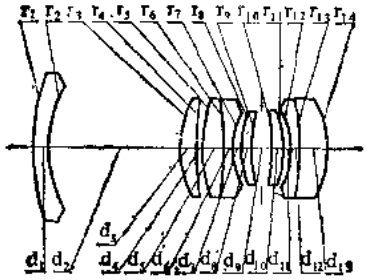


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-04-074

高分辨能力逆望远型摄影物镜

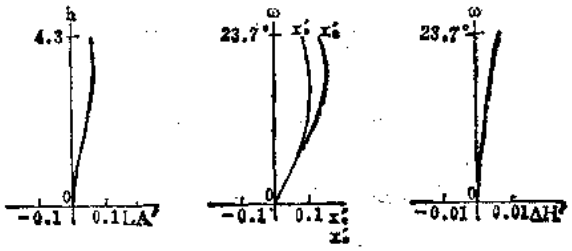
E. F. L＝54.22　　B. F. L＝48.61　　FNo. ＝6.3　　F. A. ＝±23.7°

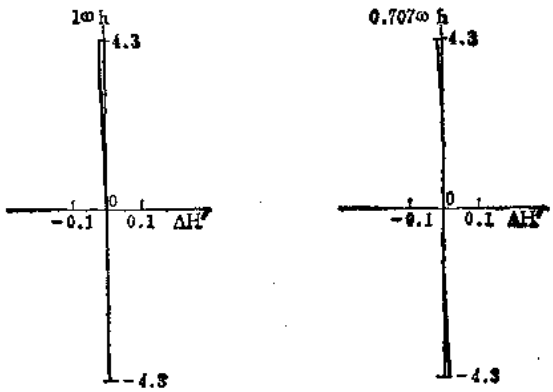


序号	r	d	n	ν
1	44.83394	2.93000	1.43496	95.1
2	25.73322	28.78180		
3	19.80108	3.56177	1.72406	42.1
4	56.83558	0.83527		
5	32.61549	4.26552	1.72406	42.1
6	－66.66596	1.76000	1.67766	32.1
7	12.72943	1.40793		
8	19.40703	1.88000	1.64268	44.9
9	33.50201	3.65367*		
10	－42.05745	1.88000	1.64129	55.4
11	－18.76728	0.91809		
12	－13.25762	1.76000	1.67766	32.1
13	－43.01721	6.04127	1.72406	42.1
14	－19.05149			

3.65367* = 1.82632 + 1.82735

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.00197	0.00038	0.00040	0.00499	0.00431	23.7	0.03%
h 或 ω% h 或 ω%	LA′ ΔH′	ΔH′ x'_t	x'_t x'_s	x'_s $x'_s - x'_m$	$x'_s - x'_m$ $x'_s - x'_m$	K'_{T1} K'_{T1}	$K'_{T0.7}$ $K'_{T0.7}$
100	0.064	0.007	0.142	0.081	0.061	0.0056	0.0071
70	0.056	0.005	0.160	0.123	0.037	0.0033	0.0031



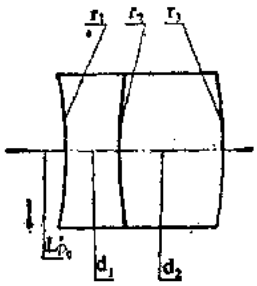


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-001

能 调 正 的 镜 头

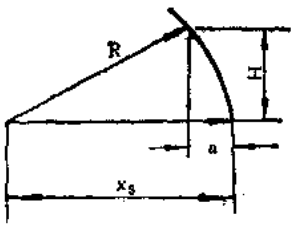
E. F. L＝182.903　　B. F. L＝201.199　　FNo. ＝ 7　　F. A. ＝ ±　　$Lp_0^* = 2.092$



序　号	r	d	n	v
1	－82.705	3.518	1.5154	54.6
2	36.353	7.847	1.6112	57.2
3	－36.353 †			
3	－36.353 †			

注：1915年公开发表。

† r_3是非球面，x_3由R，H和a求得。



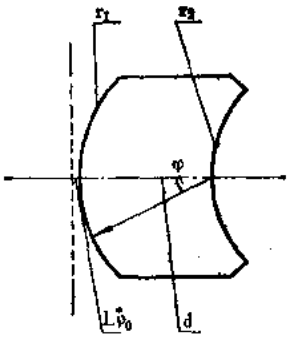
R	H	a
36.44918	2.93871	0.1188
36.49588	3.57804	0.1762
36.71940	5.73250	0.4524
36.73994	5.89134	0.4779
36.92911	7.17488	0.7093
37.69024	10.81610	1.6152
38.87305	14.54600	2.9256

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-002

摄 影 物 镜

E.F.L=110.56　B.F.L=67.41　FNo.=7.7　F.A.=±15°　Lp_0^*=0.20



序　号	r	d	n	ν
1	20†	20	1.64	
2	17			

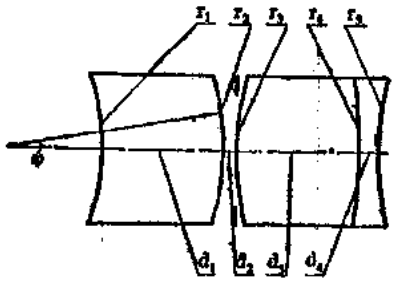
注：1936年公开发表。

† r_1是非球面，非球面方程为：$x_1=20+5.188\times10^{-6}\times20^4\varphi^4$

编号：09-06-003

摄 影 物 镜

E.F.L=34.16　B.F.L=31.10　FNo.=2.7　F.A.=±19°



序　号	r	d	n	ν
1	−9.0	5.00	1.600	60.6
2	−9.0†	0.51*		
3	12.0	5.20	1.670	47.4
4	−20.0	0.80	1.670	32.2
5	11.8			

0.51*=0.50+0.01

注：1936年公开发表。

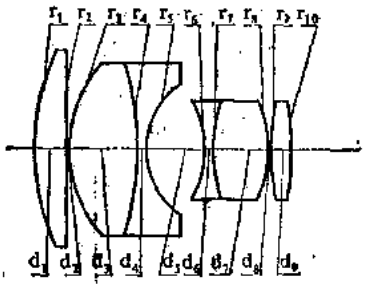
† r_1是非球面，非球面方程为：$x_1=-9-8.0260\times10^{-5}\times9^4\times\varphi^4+3.5531\times10^{-7}\times9^6\times\varphi^6$
$-5.3976\times10^{-10}\times9^8\times\varphi^8-2.5585\times10^{-13}\times9^{10}\times\varphi^{10}$

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-004

照 相 机 物 镜

E. F. L＝0.994英寸　　B. F. L＝0.481　　FNo. ＝1.1　　F. A. ＝ ±



序　号	r	d	n	ν
1	0.939	0.120	1.6105	53.3
2	19.340	0.003		
3	0.502	0.290	1.6134	59.3
4	－1.180	0.033	1.6504	33.7
5	0.807	0.230		
6	－0.390	0.033	1.6504	33.7
7	0.600	0.215	1.6530	46.2
8	－0.487	0.003		
9	0.975	0.083	1.6530	46.2
10	－1.267†			

注：1937年公开发表。

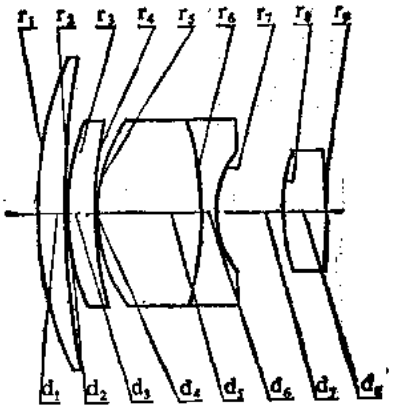
† r_{10}是非球面，非球面方程为，　$y^2 = 23.132x^3_{10} + 2.534x_{10}$

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-005

照 相 机 物 镜

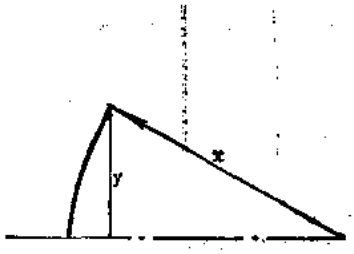
E. F. L＝1英寸　　B. F. L＝0.328　　FNo. ＝ 1　　F. A. ＝ ±



序　号	r	d	n	v
1	1.2147	0.0886	1.6134	59.30
2	3.1065	0.0000		
3	0.7327	0.0840	1.6134	59.30
4	1.1855	0.0000		
5	0.5042	0.3370	1.6056	60.00
6	−1.0516	0.0340	1.6972	50.55
7	0.2903†	0.2294		
8	0.5939	0.1371	1.6134	59.30
9	−1.9062			

注：1937年公开发表。

† r_7是非球面，非球面方程为：$y^2 = 0.5252x_7 - 0.6361x_7^2 + 0.00211$

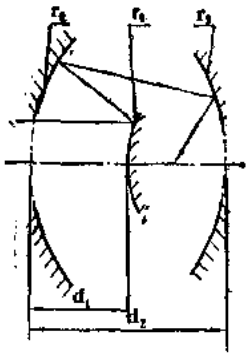


PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-006

光 学 系 统

E. F. L＝1　　B. F. L＝－1　　FNo. ＝　　F. A. ＝±



序　号	r	d	n	v
1	2	－2	1	
2	4†	4	－1	
3	－4†		1	
4			－1	

注：1942年公开发表。

† r_2和r_3都是非球面，非球面方程分别为：

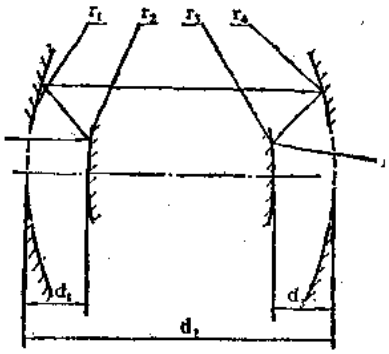
$x_2 = r_2 + 0.2171\times10^{-8}\times(r_2\theta)^4 + 1.0050\times10^{-4}\times(r_2\theta)^6 - 0.8337\times10^{-8}\times(r_2\theta)^8 - 0.3471\times10^{-7}\times(r_2\theta)^{10}$，

$x_3 = r_3 + 0.1954\times10^{-1}\times(r_3\theta)^4 - 0.6749 + 0.1035\times10^{-2}\times(r_3\theta)^8 - 0.2758\times10^{-2}\times(r_3\theta)^{10}$

编号：09-06-007

光 学 系 统

E. F. L＝1　　B. F. L＝0.5　　FNo. ＝　　F. A. ＝±



序　号	r	d	n	v	序　号	r	d	n	v
1	1.00	－0.25	1		4	－1.00		－1	
2	1.25†	1.25	－1		5			1	
3	－1.25†	－0.25	1						

注：1942年公开发表。

† r_2和r_3都是非球面，非球面方程分别为：

$x_2 = 1.25 + 0.04640^4 + \cdots$，

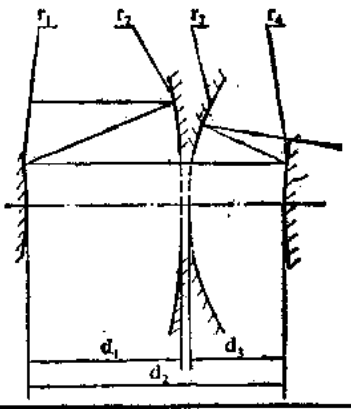
$x_3 = -1.25 + 0.04640^4 + \cdots$

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-008

光 学 物 镜

E. F. L＝0.998　　B. F. L＝0.726　　FNo. ＝　　F. A. ＝±



序　号	r	d	n	ν
1	－2.500†	－0.625	1	
2	－1.250†	1.125	－1	
3	1.667†	－0.380	1	
4	0.909†		－1	
5			1	

注：1943年公开发表。

† r_1，r_2，r_3 和 r_4 都是非球面，非球面方程分别为：

$x_1 = -0.2y^2 + 0.0043y^4 + \cdots$；　　$x_2 = -0.4y^2 - 0.0020y^4 + \cdots$；

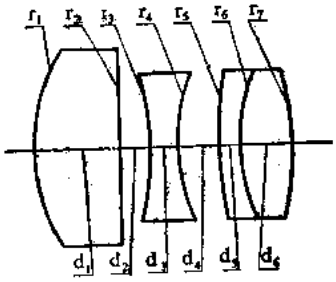
$x_3 = 0.3y^2 + 0.1340y^4 + \cdots$；　　$x_4 = 0.55y^2 - 0.1180y^4 + \cdots$

$x_3 = 0.3y^2 + 0.1340y^4 + \cdots$；　　$x_4 = 0.55y^2 - 0.1180y^4 + \cdots$

编号：09-06-009

摄 影 物 镜

E. F. L＝99.92　　B. F. L＝71.58　　FNo. ＝2　　F. A. ＝±20°



序　号	r	d	n	ν
1	41.010	17.24	1.62019	60.4
2	－4941.800	6.60		
3	－82.996	4.53	1.62423	35.8
4	35.377	8.53		
5	114.700†	4.31	1.59551	39.2
6	35.820	11.64	1.67110	47.3
7	－63.930			

注：五十年代公开发表。

† r_5 是非球面，非球面方程为：

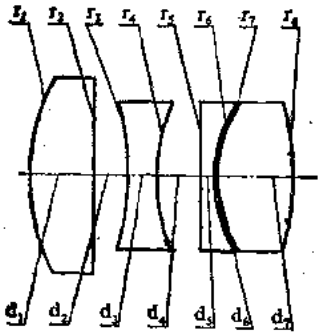
$$x_5 = r_5 + 9.5126\times10^{-7}\times(r_5\Phi)^4 - 6.8290\times10^{-7}\times(r_5\Phi)^6 - 2.44178\times10^{-11}\times(r_5\Phi)^8$$

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-010

摄 影 物 镜

E. F. L＝99.90　　B. F. L＝77.99　　FNo. ＝ 2　　F. A. ＝ ±20°



序　号	r	d	n	v
1	42.055	13.35	1.65725	
2	－420.920	6.35		
3	－74.915	6.20	1.65446	
4	53.853	8.68		
5	513.825	2.63	1.54895	
6	26.429†	0.02		
7	26.429†	16.35	1.65725	
8	－49.868			

注：五十年代公开发表。

† r_6和r_7都是非球面，非球面方程分别为：

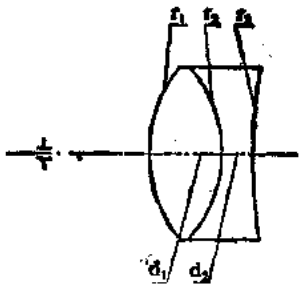
$x_6 = r_6 + 1.06717\times10^{-6}(r_6\varphi)^4 - 2.15271\times10^{-8}(r_6\varphi)^6 + 4.39341\times10^{-10}(r_6\varphi)^{10}$，

$x_7 = r_7 + 7.7290\times10^{-6}(r_7\varphi)^4 - 9.1582\times10^{-9}(r_7\varphi)^8 + 5.2143\times10^{-10}(r_7\varphi)^{10}$

编号：09-06-011

目　　镜

E. F. L＝100　　B. F. L＝68.5　　$\Phi_{\text{视}}/2 = 2$**　　F. A. ＝ ±6°**



序　号	r	d	n	v
1	64.29†	34.43	1.6968	56.1
2	－58.14	14.29	1.6725	32.2
3	393.29			

注：五十年代公开发表。

† r_1是非球面，非球面方程及系数为：

$x_1 = Ay^2 + By^4 + Cy^6 + Dy^8 + Ey^{10}$；　$A = 8.5559\times10^{-8}\sim 7\times10^{-8}$；　$B = -7.7608\times10^{-7}\sim -7.0216\times10^{-7}$，

$C = 1.4921\times10^{-10}\sim1.2711\times10^{-10}$；　$D = -2.5136\times10^{-14}\sim -1.8920\times10^{-14}$，

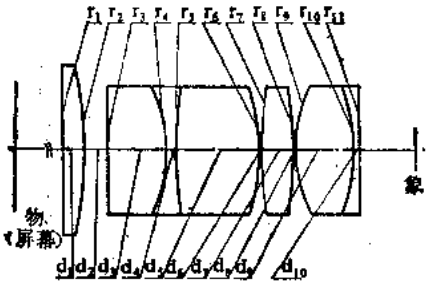
$E = -2.8470\times10^{-17}\sim -1.5330\times10^{-17}$

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-012

光学透镜系统

E.F.L＝1　B.F.L＝0.48　FNo.＝0.65　F.A.＝±



序　号	r	d	n	ν
1	－23.6489	0.1887	1.5064	57.6
2	－4.1303†	0.2354		
3	∞	0.5642	1.6102	58.6
4	－1.2416	0.0894	1.7206	29.3
5	3.8202	0.7737	1.6102	58.6
6	－1.8741	0.0010		
7	3.4609	0.2861	1.6102	58.6
8	－4.1386	0.0010		
9	1.2416	0.5662	1.6102	58.6
10	－1.6389	0.0397	1.6050	37.9
11	13.9895			

注：1951年公开发表。

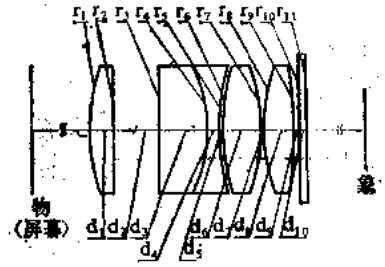
† r_2是非球面，非球面方程为：

$$x_2 = 0.121057y^2 - 0.161496y^4 - 0.067237y^6 - 0.048490y^8 - 0.009495y^{10}$$

编号：09-06-013

光学透镜系统

E.F.L＝1　B.F.L＝0.53　FNo.＝0.95　F.A.＝±



序　号	r	d	n	ν
1	1.3825	0.15460	1.5104	56.0
2	－4.9540†	0.27350		
3	∞	0.28530	1.5104	56.0
4	－0.7822	0.04756	1.6000	33.0
5	1.5853	0.02021		
6	1.6513	0.23420	1.6153	58.6
7	－1.3211	0.01189		
8	1.4325	0.16410	1.5104	56.0
9	－4.2462	0 01189		
10	∞	0.03567	1.5000	56.0
11	∞			

注：1951年公开发表。

† r_2是非球面，非球面方程为：

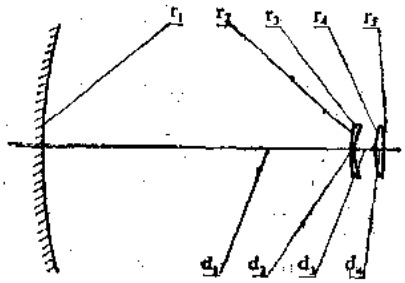
$$x_2 = 0.100929y^2 - 0.299968y^4 - 0.029642y^6 - 0.082767y^8$$

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-014

物　镜

E.F.L＝100　　B.F.L＝16.6　　FNo.＝2　　F.A.＝±0.25°



序　号	r	d	n	v
1	212.30†	84.670	1.0000	
2	52.40	0.510	1.0000	
3	16.91	4.234	1.4588	67.9
4	30.42	1.355	1.0000	
5	−48.72		1.4588	67.9
6			1.0000	

注：1954年公开发表。

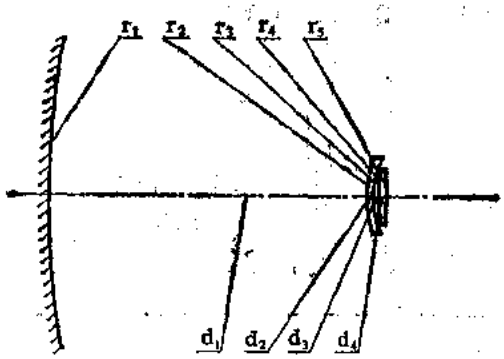
† r_1是非球面，非球面方程为：

$$x_1 = r_1 + 2.23 \times 10^{-8} \times (r_1\varphi)^4$$

编号：09-06-015

物　镜

E.F.L＝100　　B.F.L＝27.71　　FNo.＝4　　F.A.＝±0.25°



序　号	r	d	n	v
1	285.40†	99.90	1.0000	
2	39.56	1.43	1.0000	
3	29.80	0.29	1.7618	26.5
4	44.15	1.90	1.0000	
5	−114.60		1.5163	64.0
6			1.0000	

注：1954年公开发表。

† r_1是非球面，非球面方程为：

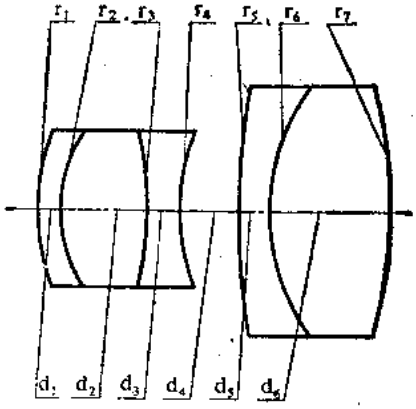
$$x_1 = r_1 + 2.23 \times 10^{-8} \times (r_1\varphi)^4$$

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-016

放　大　镜

E.F.L＝2.5英寸　　B.F.L＝1.24　　FNo.＝　　F.A.＝±



序　号	r	d	n	ν
1	1.418	0.140	1.517	64.5
2	0.878	0.568	1.642	58.1
3	−2.153	0.185	1.617	36.6
4	1.345†	0.387		
5	4.782	0.205	1.617	36.6
6	1.345	0.790	1.678	55.5
7	−3.063†			

注：1. M＝4 ˣ　　2. 1959年公开发表。

† r_4和r_7都是非球面，非球面方程分别为：

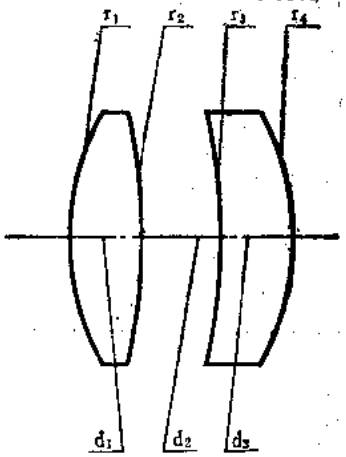
$$x_4 = r_4 - \sqrt{r_4^2 - y^2} + 0.121334y^4 + 0.083179y^6 + 0.335640y^{10};\quad x_7 = r_7 + \sqrt{r_7^2 - y^2} - 0.803270y^8 - 0.001821y^{10}$$

编号：09-06-017

编号：09-06-017

小畸变大孔径光学放大镜

E.F.L＝1.5　　B.F.L＝0.96　　FNo.＝　　F.A.＝±



序　号	r	d	n	ν
1	1.28†	0.33	1.49	
2	−2.80†	0.35		
3	−2.80†	0.33	1.49	
4	−1.28†			

注：1961年公开发表。

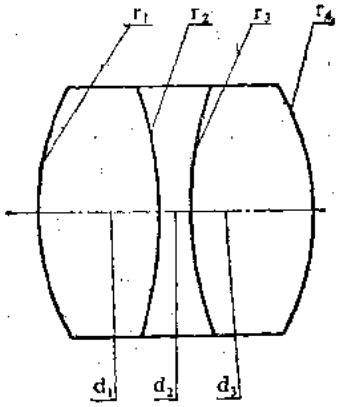
† r_i是非球面，非球面方程为：$x_i = \dfrac{y^2}{2r_i} + \dfrac{(1-e^2)y^4}{8r_i^3}$　（i＝1，2，3，4；$e^2 = 2.25$）

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-018

小畸变大孔径光学放大镜

E.F.L＝1.89　　B.F.L＝1.28　　FNo.＝　　F.A.＝±



序　号	r	d	n	v
1	1.35†	0.67	1.49	
2	－2.00†	0.16	1.59	
3	2.00†	0.67	1.49	
4	－1.35†			

注：1961年公开发表。

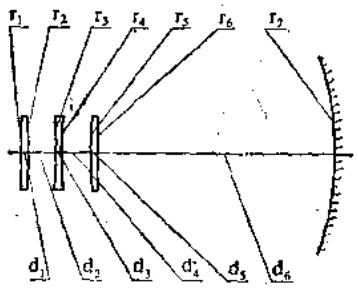
† r_i是非球面，非球面方程为：

$$x_i = \frac{y^2}{2r_i} + \frac{(1-e^2)y^4}{8r_i^3} \quad (i = 1, 2, 3, 4,\ e^2 = 1.80)$$

编号：09-06-019

校正装置用光学系统

E.F.L＝1　　B.F.L＝－1.1　　FNo.＝1　　F.A.＝±



序号	r	d	n	v	序号	r	d	n	v
1	－21.014	0.053	1.0000		5	5.782†	0.053	1.0000	
2	－5.782†	0.216	1.5497	45.8	6	21.014	1.832	1.5497	45.8
3	－6.436†	0.032	1.0000		7	－2.101		1.0000	
4	6.436†	0.216	1.6110	58.8	8			－1.0000	

注：1962年公开发表。

† r_2，r_3，r_4和r_5都是非球面，非球面方程分别为：

$$x_2 = -5.782 + \sqrt{(-5.782)^2 - y^2} - 0.064857y^4 + 0.004165y^6;$$

$$x_3 = -6.436 + \sqrt{(-6.436)^2 - y^2} - 0.091781y^4 - 0.014388y^6 - 0.008684y^8;$$

$$x_4 = -x_3$$

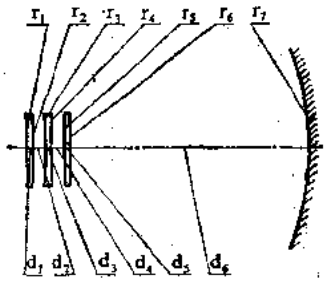
$$x_5 = -x_2$$

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-020

校正装置用光学系统

E. F. L＝1　　B. F. L＝－1.05　　FNo. ＝1　　F. A. ＝±



序号	r	d	n	ν	序号	r	d	n	ν
1	－25.6300	0.051	1.00000		5	5.3430†	0.051	1.00000	
2	－5.3430†	0.103	1.55772	53.83	6	25.6300	1.902	1.55772	53.83
3	－6.2900†	0.031	1.00000		7	－2.0505		1.00000	
4	6.2900†	0.103	1.60302	60.67	8			－1.00000	

注：1962年公开发表。

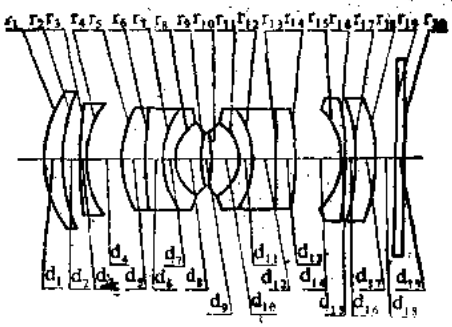
† r_2、r_3、r_4和r_6都是非球面，非球面方程分别为：$x_2 = -5.343 + \sqrt{(-5.343)^2 - y^2} - 0.151002y^4 + 0.047280y^6$；

$x_3 = -6.290 + \sqrt{(-6.290)^2 - y^2} - 0.172960y^4 + 0.021018y^6$；　$x_4 = -x_3$，　$x_6 = -x_2$

编号：09-06-021

广　角　物　镜

E. F. L＝1　　B. F. L＝－2.01　　FNo. ＝3.5　　F. A. ＝±30°



序号	r	d	n	ν	序号	r	d	n	ν
1	0.69351	0.12136	1.56376	60.76	11	－0.17338	0.07282	1.80370	41.80
2	1.05077	0.10403			12	－0.43344	0.14181	1.67252	32.23
3	2.92136	0.02774	1.80370	41.80	13	∞	0.13508	1.88040	41.10
4	0.47243	0.22539			14	－1.19378	0.26994		
5	0.58352	0.13508	1.88040	41.10	15	－0.40014	0.02774	1.75766	31.56
6	3.46755	0.11512	1.67252	32.23	16	－1.51526	0.03468		
7	0.43344	0.07282	1.80370	41.80	17	－1.08105	0.12483	1.80370	41.80
8	0.18743	0.13870	1.77670	44.69	18	－0.80335	0.12578		
9	69.35294†	0.04161*			19	∞	0.05450	1.51700	64.50
10	－69.35294†	0.13870	1.77670	44.69	20	∞			

0.04161* = 0.02080 + 0.02081

注：1962年公开发表。

† r_9和r_{10}都是非球面，非球面方程分别为：

$$x_9 = 0.60480y^4 - 8.90316y^6 + 837.42000y^{10}$$

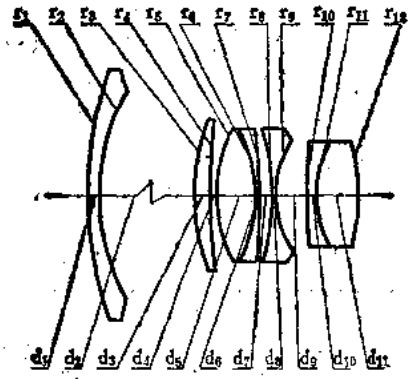
$$x_{10} = 0.39314y^4 + 15.04820y^6 + 709.49000y^8 - 13755.10000y^{12}$$

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-022

广 角 物 镜

E.F.L＝1　　B.F.L＝0.9　　FNo.＝2　　F.A.＝±31°



序号	r	d	n	v	序号	r	d	n	v
1	2.370	0.055	1.55154	63.54	7	－16.782	0.048		
2	1.133	1.225			8	－1.289	0.039	1.62576	35.74
3	1.241	0.080	1.70000	41.18	9	0.588	0.158		
4	3.874	0.002			10	8.000†	0.053	1.62576	35.74
5	0.771	0.247	1.69100	54.80	11	0.616	0.165	1.69100	54.80
6	－0.795	0.033	1.65350	53.39	12	－0.783			

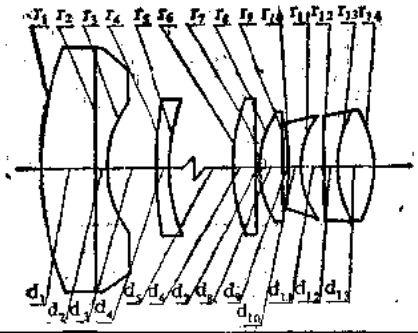
注：1963年公开发表。

† r_{10}是非球面，非球面方程为：　$x_{10}=8-\sqrt{8^2-y^2}+0.347y^4+1.483y^6+2.840y^8$

编号：09-06-023

改进的广角望远物镜

E.F.L＝0.909　　B.F.L＝1.268　　FNo.＝2　　F.A.＝±41°



序号	r	d	n	v	序号	r	d	n	v
1	2.6396	0.4520	1.74400	44.71	8	0.8276	0.2080	1.71300	53.89
2	－66.6890	0.0810	1.65100	58.60	9	－15.0020	0.0340		
3	0.8606	0.4020			10	－3.1746	0.0905	1.70035	30.28
4	3.3103	0.0970	1.69100	54.80	11	0.6905	0.1750		
5	1.4860	0.9040			12	－13.5420†	0.0960	1.62576	35.74
6	1.4830	0.1900	1.70000	41.18	13	0.9085	0.3070	1.71300	53.89
7	∞	0.0070			14	－0.9085			

注：1963年公开发表。

† r_{12}是非球面，非球面方程为：

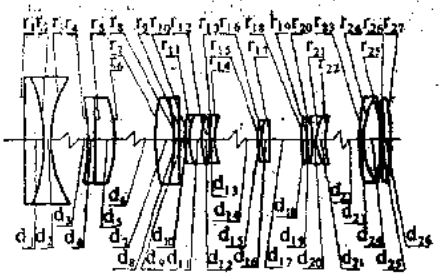
$$x_{12}=-13.5420-\sqrt{(-13.5420)^2-y^2}-0.54900y^4-0.18073y^6+0.45410y^8+1.18340y^{10}$$

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-024

等效变焦距物镜

E.F.L＝0.5～2.5　　B.F.L＝2.908　　FNo.＝4　　F.A.＝±11.5°～±2.5°



序　号	r	d	n	v
1	15.4705	0.23059	1.70035	30.28
2	－2.1140	0.07007	1.51899	60.42
3	0.8971	0.04861		
4	－3.2665	0.07644	1.70035	30.28
5	24.9804	0.22040	1.61342	59.27
6	－1.4543	* * * 1		
7	2.3020	0.21250	1.65695	50.81
8	－2.3020	0.06875	1.76180	26.98
9	－25.4945	* * * 2		
10	3.0841	0.04125	1.69100	54.80
11	0.3886	0.10300*	1.67400	32.00
12	0.9988	0.10300		
13	－1.9290	0.04125	1.69100	54.80
14	6.2500	* * * 3		
15	1.2025	0.03750	1.76180	26.98
16	0.7318	0.07500	1.50970	64.44
17	∞	* * * 4		
18	1.8262†	0.06250	1.48503	70.29
19	－3.8225	* * * 5		
20	1.2174	0.03750	1.65695	50.81
21	0.4909	0.07500	1.76180	26.98
22	1.1742	* * * 6		
23	2.0886	0.05000	1.76180	26.98
24	0.8273	0.17500	1.61334	57.59
25	－2.0464	0.00250		
26	10.8629	0.07500	1.50970	64.44
27	－2.5096			

$0.10300^{*} = 0.07800 + 0.02500$

注：1965年公开发表。

† r_{18}是非球面，非球面方程为：

$$x_{18} = (1.8262 - \sqrt{3.3348 - y^2}) - 0.004135y^4 + 0.233000y^6 - 0.254100y^8 + 8.9\times10^{-2}y^{10}$$

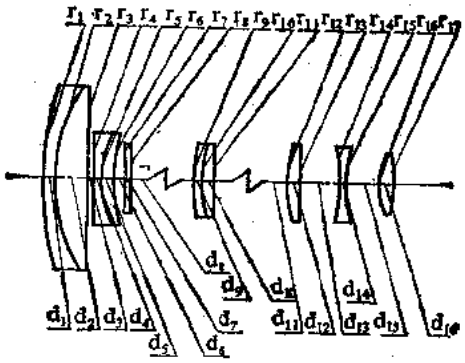
E.F.L	0.49981	1.11764	2.49920
* * * 1	0.97720	0.62490	0.97720
* * * 2	0.03750	1.31225	1.88225
* * * 3	1.88225	1.31225	0.03750
* * * 4	0.42738	0.07500	0.42738
* * * 5	0.050～0.765	0.050～0.765	0.050～0.765
* * * 6	0.765～0.050	0.765～0.050	0.765～0.050

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-025

图象变化和调节均匀的变焦距物镜

E.F.L＝0.238～1.192　　B.F.L＝0.3686　　FNo. ＝ 4　　F.A. ＝ ±11.5°～±2.5°



序　号	r	d	n	ν
1	1.9964	0.0625	1.76180	26.98
2	1.0849	0.2125	1.61770	49.78
3	－19.1161	* * * 1		
4	5.9363	0.0375	1.69100	54.80
4	5.9363	0.0375	1.69100	54.80
5	0.4401	0.0750	1.71740	29.51
6	1.0484	0.0750		
7	－1.6614	0.0375	1.69100	54.80
8	10.1010	* * * 2		
9	1.1659	0.0375	1.76180	26.98
10	0.7101	0.0750	1.50970	64.44
11	∞	* * * 3 *		
12	0.7962 †	0.0750	1.61029	57.25
13	－41.3223	0.2550		
14	－1.0533	0.0250	1.60483	43.83
15	0.7468	0.2000		
16	0.2790	0.0750	1.60557	60.02
17	－0.8569			

注：1965年公开发表。

† r_{12}是非球面，非球面方程为：

$$x_{12} = (0.7962 - \sqrt{0.6339 - y^2}) - 0.02092y^4 + 0.23700y^6 + 0.00300y^8 + 8.55330y^{10}$$

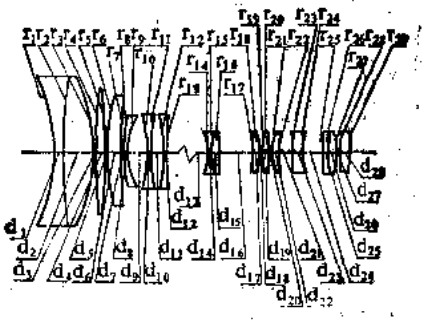
E.F.L	0.23858	0.53344	1.19270
* * * 1	0.03750	1.27360	1.82640
* * * 2	1.82640	1.27360	0.03750
* * * 3	0.41675	0.07500	0.41675

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-026

高变倍率等效变焦距物镜

E. F. L＝1～10　　B. F. L＝2.675　　FNo. ＝ 4　　F. A. ＝ ±27°～±2.7°



序号	r	d	n	v	序号	r	d	n	v
1	－7.2114	0.2014	1.78470	26.10	16	14.1274	* * * 3		
2	12.9661	0.8928	1.51507	56.35	17	－10.0095	0.1875	1.51680	64.20
3	－5.8567	0.0045			18	－1.9192	0.0045		
4	16.2336	0.3661	1.71700	47.90	19	2.6841	0.1875	1.51680	64.20
5	－22.5012	0.0045			20	－10.8725	0.0045		
6	5.6034	0.4241	1.71700	47.90	21	1.3446	0.1875	1.51680	64.20
7	24.5154	* * * 1			22	2.9064	0.4375		
8	3.9647	0.0804	1.69734	56.19	23	－4.2315 †	0.3777	1.72830	28.66
9	1.7362	0.5178			24	1.9174	0.4714		
10	－3.9138	0.0714	1.69734	56.19	25	∞	0.0929	1.72830	28.66
11	4.4458	0.3036	1.78470	26.10	26	2.3366	0.2304	1.61342	59.27
12	－4.4458	0.0714	1.69734	56.19	27	－2.3366	0.0045		
13	8.2572	* * * 2			28	5.7670	0.2304	1.61342	59.27
14	－1.8601	0.0536	1.69734	56.19	29	－5.7670			
15	1.8601	0.1518	1.78470	26.10					

注：1. 光栏位置在 r_{17} 前 0.0625 处；

2. 1967年公开发表。

† r_{23} 是非球面，非球面方程为：

$$x_{23} = -4.2315 + \sqrt{17.90559 - y^2} - 0.01666805y^4 + 0.02010843y^6 - 0.00176346y^8 - 0.00553820y^{10}$$

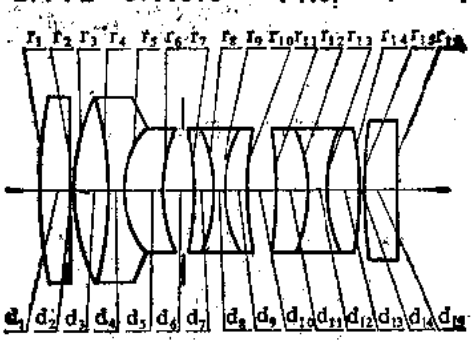
E. F. L	0.99991	1.77812	3.16203	5.62294	9.99916
* * * 1	0.04318	1.59156	2.76329	3.64395	4.23190
* * * 2	3.63462	2.01054	0.86219	0.23005	0.23796
* * * 3	0.98730	1.06300	1.03962	0.79109	0.19524

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-027

复消色差准广角物镜

E. F. L＝1　　B. F. L＝0.71618　　FNo. ＝ 4　　F. A. ＝ ±30°**



序号	r	d	n	ν	序号	r	d	n	ν
1	0.77304	0.03665	1.62041	60.29	9	0.20867†	0.03587	1.60311	60.68
2	∞	0.00156			10	0.58538†	0.04243		
3	0.38205	0.05459	1.60311	60.68	11	−0.79292†	0.04367	1.62041	60.29
4	−0.64988	0.02028	1.55781	53.84	12	−0.26879	0.02340	1.55781	53.84
5	0.15723	0.05771	1.60311	60.68	13	0.26195	0.05303	1.57250	57.48
6	0.27852	0.05069			14	−0.56106	0.00390		
7	−0.56120†	0.02963	1.62041	60.29	15	1.11249	0.04679	1.62041	60.29
8	−0.28173†	0.01638	1.53172	48.87	16	−1.88459			

注：1967年公开发表。

† r_i 是非球面，非球面方程为：

† r_i 是非球面，非球面方程为：

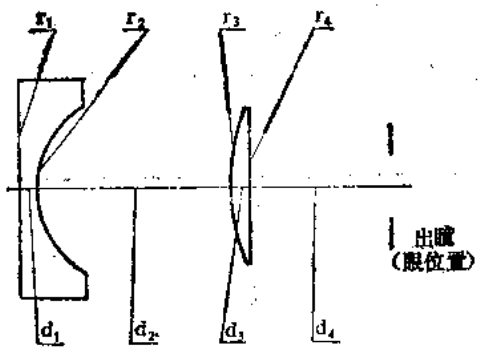
$$x_i = \frac{cy^2}{1+\sqrt{1-c^2y^2}} + Ay^4 + By^6 + Cy^8 + Dy^{10} \qquad \left(i = 7,\ 8,\ 9,\ 10;\ c_i = \frac{1}{r_i}\right)$$

	C	A	B	C	D
x_7	−1.78188	0.075113	47.2089	−85.567	81.977
x_8	−3.54945	18.452900	−1.8374	21724.500	0
x_9	4.79223	−28.343800	−965.3900	20253.800	0
x_{10}	1.70827	−1.686120	−9.1200	24.672	86.965

编号：09-06-028

非球面逆伽利略式光学系统

E. F. L＝264.9　B. F. L＝−131.3　$\phi_{出}/2 = 2$ **　F. A. ＝ ±30°



序号	r	d	n	ν
1	∞	2.3	1.52249	
2	9.20†	21.2		
3	21.72	2.0	1.52249	
4	∞	15.0		

注：1. d_4为出瞳距离；2. 望远比＝0.461；
3. 七十年代公开发表。

† r_2是非球面，非球面方程为：

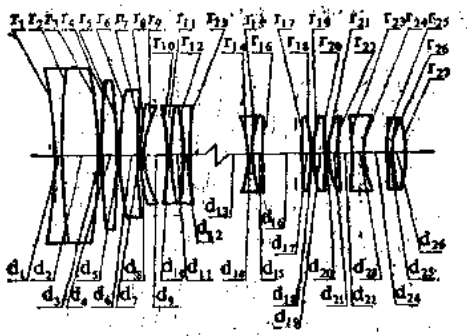
$$x_2 = \frac{c_2y^2}{1+\sqrt{1-(1+a)c_2^2y^2}} \qquad \left(c_2 = \frac{1}{r_2},\ a = -0.73\right)$$

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-029

高变倍率等效变焦距物镜

E.F.L＝1～10　　B.F.L＝2.830　　FNo.＝4　　F.A.＝±27°～±2.7°



序　号	r	d	n	v
1	－5.0480	0.1410	1.78470	26.10
2	9.0764	0.6250	1.51507	56.35
3	－4.0997	0.0031		
4	11.3636	0.2563	1.71700	47.90
5	－15.7510	0.0031		
6	3.9224	0.2962	1.71700	47.90
7	17.1609	* * * 1		
8	2.7753	0.0563	1.69734	56.19
9	1.2154	0.3625		
10	－2.7397	0.0500	1.69734	56.19
11	3.1121	0.2125	1.78470	26.10
11	3.1121	0.2125	1.78470	26.10
12	－3.1121	0.0500	1.69734	56.19
13	5.7801	* * * 2		
14	－1.3021	0.0375	1.69734	56.19
15	1.3021	0.1063	1.78470	26.10
16	9.8892	* * * 3 *		
17	13.8889	0.1250	1.52400	58.87
18	－1.8116	0.0031		
19	1.8116	0.1250	1.52400	58.87
20	－8.3333	0.0031		
21	1.0417	0.1250	1.52400	58.87
22	3.1250	0.2378		
23	－4.0770 †	0.2133	1.72830	28.66
24	1.0626	0.3175		
25	5.1589	0.0625	1.72830	28.66
26	1.5001	0.1563	1.61452	56.22
27	－1.5001			

注：1. 光栏位置在 r_{17} 前0.0625 处；2. 1969 年公开发表。

† r_{23} 是非球面，非球面方程为：

$$x_{23} = -4.0770 + \sqrt{16.62193 - y^2} - 0.02459203y^4 + 0.08899172y^6 - 0.24405900y^8 - 0.07442450y^{10}$$

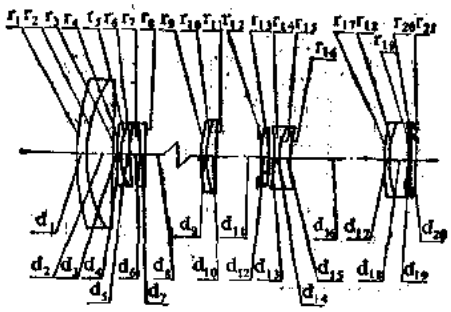
E.F.L	0.99995	1.77827	3.16227	5.62274	9.99885
* * * 1	0.03023	1.11409	1.93430	2.55076	2.96233
* * * 2	2.54423	1.40738	0.60383	0.16104	0.16657
* * * 3 *	0.68858	0.74157	0.72521	0.55123	0.13414

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-030

照　相　物　镜

E.F.L=1～5　　B.F.L=2.929　　FNo.=4～8　　F.A.=±11.5°～±2.5°



序　号	r	d	n	v
1	1.9964	0.0625	1.76180	26.98
2	1.0849	0.2125	1.51770	49.78
3	−19.1161	* * * 1		
4	5.9363	0.0375	1.69100	54.80
5	0.4401	0.0750	1.71740	29.51
6	1.0484	0.0750		
7	−1.6614	0.0375	1.69100	54.80
8	10.1010	* * * 2		
9	1.1659	0.0375	1.76180	26.98
10	0.7101	0.0750	1.50970	64.44
11	∞	* * * 3		
12	1.8431 †	0.0625	1.48503	70.29
13	−3.8536	* * * 4		
14	−1.2288	0.0375	1.65695	50.81
15	0.4955	0.0750	1.76180	26.98
16	1.1848	* * * 5		
17	2.1073	0.0425	1.76180	26.98
18	0.8350	0.1500	1.61334	57.59
19	−2.0653	0.0025		
20	10.9880	0.0625	1.50970	64.44
21	−2.5082			

注：1969年公开发表。

† r_{12} 是非球面，非球面方程为：

$$x_{12}=1.8431-\sqrt{3.3970-y^2}-0.01782y^4+0.21070y^6+0.87720y^8-1.88190y^{10}$$

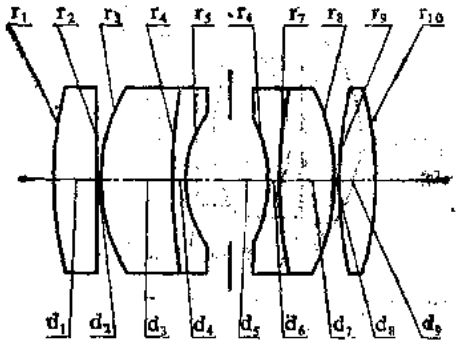
E.F.L	0.99995	2.23590	4.99959
* * * 1	0.03750	1.27360	1.82640
* * * 2	1.82640	1.27360	0.03750
* * * 3	0.41675	0.07500	0.41675
* * * 4	0.0500～0.7716	0.0500～0.7716	0.0500～0.7716
* * * 5	0.7716～0.0500	0.7716～0.0500	0.7716～0.0500

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-031

具有两个非球面的高速摄影物镜

E.F.L＝1　　B.F.L＝0.532　　FNo.＝1.2　　F.A.＝±22.5°



序号	r	d	n	ν	序号	r	d	n	ν
1	1.151	0.130	1.821	45.2	6	−0.450	0.031	1.844	30.0
2	4.571†	0.004			7	1.385	0.181	1.900	40.5
3	0.575	0.226	1.900	40.5	8	−0.665	0.001		
4	2.434	0.042	1.792	25.9	9	1.180	0.117	1.694	54.6
5	0.349	0.270*			10	−1.073†			

注：1969年公开发表。

† r_1是非球面，非球面方程为：

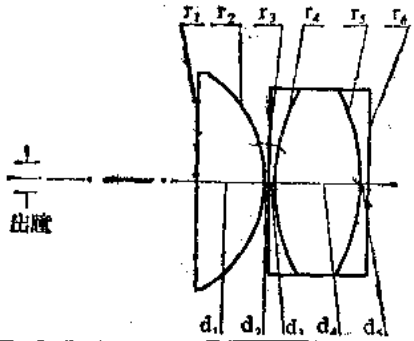
$x_i = Ay + By^2 + Cy^3 + Dy^6 + Ey^8$　（i＝1,10）；　$y = \frac{1}{2}L^2$　（L——从面的顶点到非球面上的点的长）

	A A	B B	C C	D D	E E
x_1	0.869	−0.188	0.20	−16	100
x_{10}	−0.932	1.889	−0.12	233	1670

编号：09-06-032

广　角　大　孔　径　目　镜

E.F.L＝50.49　B.F.L＝32.75　$\phi_{出}/2$＝3.2**　F.A.＝±30°　L^*_{p0}＝−57.15



序号	r	d	n	ν	序号	r	d	n	ν
1	∞	22	1.7880	50.4	4	60	26	1.7880	50.4
2	−40†	1			5	−60	2	1.7842	57.0
3	∞	2	1.7842	57.0	6	∞			

注：1969年公开发表。

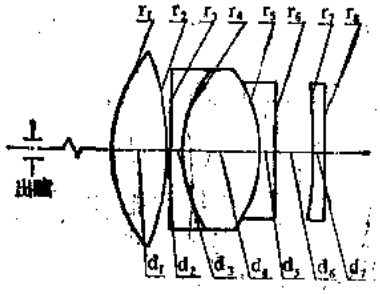
† r_2是非球面，非球面方程为：$x_2 = -1.25\times10^{-2}y^2 + 9.147\times10^{-7}y^4 - 1.75\times10^{-10}y^6$

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-033

广角大孔径目镜

E.F.L=50.87　B.F.L=−0.21　$\phi_{出}/2=3.2^{**}$　F.A.=±30°　$L^{*}_{p_0}=-57.15$



序　号	r	d	n	v
1	60.64†	22.4	1.7880	50.4
2	−99.15	0.3		
3	∞	5.1	1.7842	57.0
4	52.59	31.8	1.7880	50.4
5	−52.59	5.1	1.7842	57.0
6	∞	16.3		
7	−301.40†	3.9	1.5680	61.1
8	∞			

注：1969年公开发表。

† r_1和r_7都是非球面，非球面方程分别为：

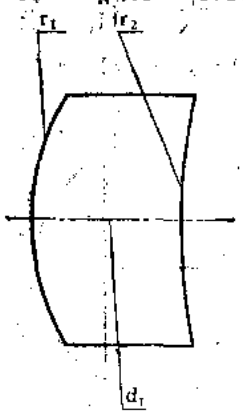
$x_1=8.2453\times10^{-3}y^2-8.0624\times10^{-7}y^4+1.9744\times10^{-11}y^6-9.2216\times10^{-16}y^8$，

$x_7=-1.6659\times10^{-3}y^2-4.2040\times10^{-6}y^4-4.7293\times10^{-10}y^6$

编号：09-06-034

对数余弦表面的非球形(照相机)镜头

E.F.L=100　B.F.L=70　FNo.=0.61　F.A.=±60°**



序　号	r	d	n	v
1	100.435†	51.536	2.4076	
2	245.408			

注：1970年公开发表。

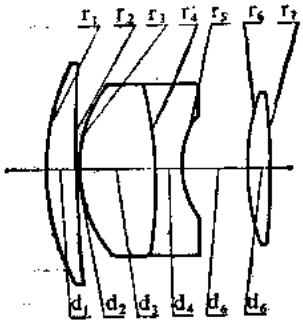
† r_1是非球面，非球面方程为：$x_1=-\dfrac{r_1}{0.43429448}\lg\cos\dfrac{y}{r_1}$

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-035

对数余弦表面的非球形(照相机)镜头

E.F.L=100.86　B.F.L=40.17　FNo.=1.6　F.A.=±30°**



序号	r	d	n	v	序号	r	d	n	v
1	75.9	16.5	1.6228	59.9	5	27.6	21.0		
2	375.0	0.6			6	75.0	7.5	1.6264	39.1
3	42.3†	24.0	1.5888	61.0	7	-204.0			
4	-141.0	9.0	1.7174	29.5					

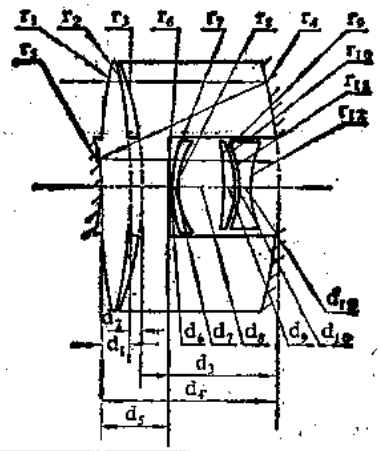
注：1970年公开发表。

† r_3是非球面，非球面方程为：$x_3=-\frac{28.3039452}{M}\lg\cos\frac{y}{34.6014}$

编号：09-06-036

折反射系统

E.F.L=659.37　B.F.L=59.13　FNo.=11　F.A.=±2°



序号	r	d	n	v	序号	r	d	n	v
1	293.950†	7.62	1.5168	64.2	7	51.620	2.54	1.5168	64.2
2	-176.300	1.40			8	24.273	15.52		
3	-112.700	47.00	1.5168	64.2	9	-77.500	1.78	1.6727	32.2
4	-151.120	-57.15	-1.5168	64.2	10	-27.406	0.51		
5	-47.152	22.86	1.5168	64.2	11	-23.610	2.79	1.5168	64.2
6	∞	0			12	39.706			

注：1970年公开发表。

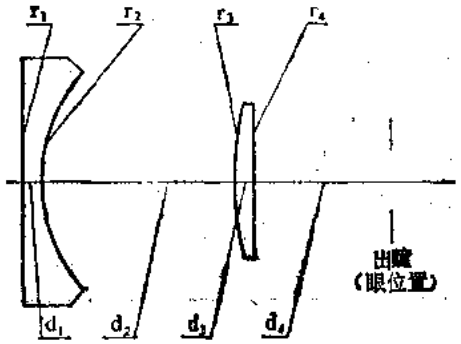
† r_1是非球面，非球面方程为：$y^2=9.62669x_1^2+587.9x_1$

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-037

非球面逆伽利略式光学系统

E. F. L＝－662　　B. F. L＝－380.9　　$\phi_{出}/2=2^{\circ\circ}$　　F. A. ＝±30°



序号	r	d	n	v
1	∞	2	1.49200	
2	13.21†	21.5		
3	26.33	2	1.52249	
4	∞	15		

注：1. d_4为出瞳距离；2. 望远比＝0.548；
3. 七十年代公开发表。

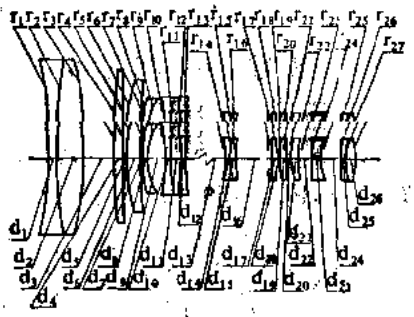
† r_2是非球面，非球面方程为：

$$x_2=\frac{c_2y^2}{1+\sqrt{1-(1+a)c_2^2y^2}}\qquad\left(c_2=\frac{1}{r_2},\ a=-0.65\right)$$

编号：09-06-038

改进的高变倍率等效变焦距物镜

E. F. L. ＝1～10　　B. F. L＝2.880　　FNo.＝4　　F. A. ＝±27°～±2.7°



序号	r	d	n	v	序号	r	d	n	v
1	－5.5349	0.1357	1.78470	21.10	15	1.3021	0.1063	1.78470	26.10
2	7.9114	0.6312	1.57427	52.02	16	9.8892	＊＊＊3		
3	－4.5290	0.5131			17	13.8889	0.1250	1.52400	58.87
4	10.1825	0.2562	1.68880	49.48	18	－1.8116	0.0031		
5	－21.1649	0.0031			19	1.8116	0.1250	1.52400	58.87
6	3.7789	0.2967	1.68880	49.48	20	－8.3333	0.0031		
7	13.9198	＊＊＊1			21	1.0417	0.1250	1.52400	58.87
8	2.7753	0.0563	1.69734	56.19	22	3.1250	0.2373		
9	1.2154	0.3625			23	－4.0770†	0.2133	1.72830	28.66
10	－2.7397	0.0500	1.69734	56.19	24	1.0626	0.3175		
11	3.1121	0.2125	1.78470	26.10	25	5.1589	0.0625	1.72830	28.66
12	－3.1121	0.0500	1.69734	56.19	26	1.5001	0.1563	1.61452	56.22
13	5.7801	＊＊＊2			27	－1.5001			
14	－1.3021	0.0375	1.69734	56.19					

注：1. 光栏位置在r_{17}前0.0625处；2. 1970年公开发表。

† r_{23}是非球面，非球面方程为：

$$x_{23}=-4.0770+\sqrt{16.62193-y^2}-0.02459203y^4+0.08899172y^6-0.24405900y^8-0.07442450y^{10}$$

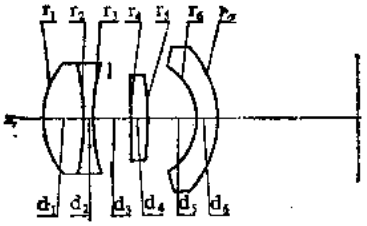
E. F. L	0.999	1.778	3.162	5.62293	9.99920
＊＊＊1	0.03123	1.11514	1.93535	2.55181	2.96338
＊＊＊2	2.54423	1.40738	0.60353	0.15104	0.16657
＊＊＊3	0.68858	0.74157	0.72521	0.55123	0.13414

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-039

广角的、总长短的照相物镜

E.F.L=0.997　　B.F.L=0.492　　FNo.=4.5　　F.A.=±31°



序号	r	d	n	ν
1	0.2121	0.096	1.58913	61.1
2	−0.5893	0.018	1.83400	37.2
3	0.4568	0.089*		
4	3.0754	0.039	1.66446	35.8
5	−0.7237	0.116		
6	−0.1380†	0.045	1.49100	61.4
7	−0.2408†			

注：七十年代公开发表。

† r_i是非球面，非球面方程为：

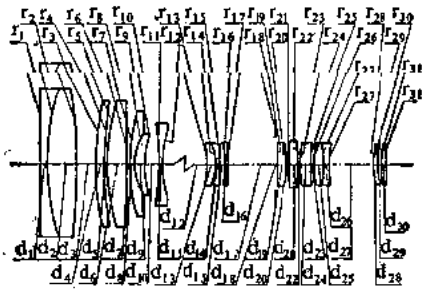
$$x_i=\frac{y^2}{r_i+r_i\sqrt{1-(y/r_i)^2}}+Ay^4+By^6+Cy^8+Dy^{10}\quad(i=6,\ 7)$$

	A	B	C	D
r_6	-2.213×10^{-1}	-3.821×10	2.381×10^{4}	-3.017×10^{6}
r_7	2.869	-7.279×10^{2}	2.482×10^{4}	-6.324×10^{5}

编号：09-06-040

超高变倍率等效变焦距物镜

E.F.L=0.99～15.83　　B.F.L=2.29　　FNo.=4～7.5　　F.A.=±17.75°～±1.20°



序号	r	d	n	ν	序号	r	d	n	ν
1	20.5867	0.1056	1.78470	26.10	17	−7.6946	* * *3		
2	3.5799	0.4224	1.51680	64.20	18	∞	0.0200		
3	−8.1179	0.2890			19	4.6008	0.1280	1.48767	69.95
4	4.2885	0.1223	1.68880	49.48	20	−1.9183	0.0016		
5	5.8987	0.0026			21	2.7306	0.1080	1.51009	64.22
6	3.2612	0.2668	1.68880	49.48	22	−3.9054	0.0016		
7	15.5358	* * *1			23	1.7700†	0.1080	1.51009	64.22
8	2.6352	0.0330	1.69864	55.99	24	4.7862	0.0016		
9	0.7174	0.1330	1.78478	26.90	25	1.0558	0.1920	1.48767	69.95
10	1.4174	0.1170			26	−2.8624	0.0570	1.78483	26.09
11	−3.2390	0.0330	1.69843	56.09	27	2.0717	0.7000		
12	1.5127	* * *2			28	1.1812	0.0540	1.69835	56.16
13	−1.5600	0.0930	1.78424	26.10	29	0.7017	0.0454		
14	−0.6703	0.0310	1.62304	57.05	30	1.8905	0.0600	1.70076	40.36
15	4.3480	0.0580			31	7.3882			
16	−1.3076	0.0310	1.69898	56.12					

注：1. r_{18}为光栏面；2. 1970年公开发表。

† r_{23}是非球面，非球面方程为：$x_{23}=1.77-\sqrt{3.16-y^2}-0.0089y^4+0.2190y^6-0.0039y^8+0.0676y^{10}$

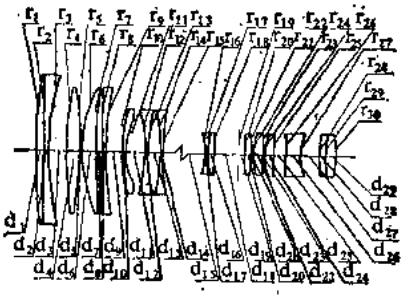
E.F.L	0.991	1.982	3.965	7.924	15.830
* * * 1	0.018	1.076	1.848	2.406	2.712
* * * 2	2.293	1.202	0.463	0.110	0.258
* * * 3	0.683	0.716	0.683	0.479	0.025

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-041

大变倍率等效变焦距物镜

E.F.L=1～8　B.F.L=2.285～2.295　FNo.＝4　F.A.＝±21°～±2.8°



序　号	r	d	n	ν
1	8.9126	0.1019	1.68868	49.63
2	−18.0832	0.0680	1.78456	26.10
3	3.9783	0.2547		
4	5.0561	0.2122	1.62077	60.53
5	−5.0561	0.0017		
6	2.1736	0.2122	1.62093	60.44
7	16.7001	0.0408		
8	55.1268	0.0680	1.62018	60.38
9	5.0911	* * * 1		
9	5.0911	* * * 1		
10	2.2196	0.0450	1.69680	56.33
11	0.9714	0.2900		
12	−2.1975	0.0400	1.69680	56.33
13	2.4990	0.1700	1.78503	26.09
14	−2.4990	0.0400	1.69680	56.33
15	4.5842	* * * 2		
16	−1.0424	0.0300	1.69680	56.33
17	1.0424	0.0850	1.78502	26.09
18	7.7833	* * * 3		
19	∞	0.0500		
20	3.4495	0.1000	1.52372	59.16
21	−2.0422	0.0025		
22	1.1240	0.1000	1.52372	59.16
23	19.8334	0.0025		
24	0.8336	0.1000	1.52372	59.16
25	2.4990	0.1899		
26	−3.2667 †	0.2220	1.72874	28.67
27	0.6773	0.2540		
28	1.8282	0.0500	1.72874	28.67
29	1.2010	0.1250	1.62041	60.29
30	−1.3298			

注：1. r_{19}为光栏面；2. 1970年公开发表。

† r_{26}为非球面，非球面方程为：

$$x_{26} = -3.2667 + \sqrt{10.6713 - y^2} - 0.03750y^4 + 0.49303y^6 - 0.35530y^8 - 0.86640y^{10}$$

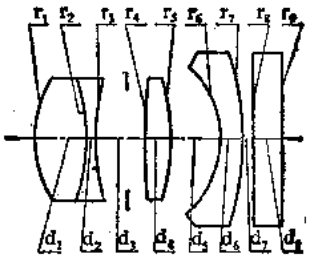
E.F.L	0.9973	1.4214	2.5284	4.4958	7.9839
* * * 1	0.0267	0.5421	1.1803	1.6734	2.0027
* * * 2	1.6413	1.1259	0.4828	0.1288	0.1332
* * * 3	0.5252	0.5434	0.5303	0.3911	0.0574

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-042

总长短的广角物镜

E. F. L＝1　　B. F. L＝0.446　　FNo.＝4.5　　F. A.＝±32°



序　号	r	d	n	ν
1	0.23094	0.1013	1.62280	57.1
2	−0.38753	0.0203	1.83400	37.2
3	0.43402	0.0943*		
4	2.33484	0.0492	1.66672	48.3
5	−0.43435	0.1010		
6	−0.17467	0.0434	1.51633	64.2
7	−0.50173	0.0145		
8	∞†	0.0579	1.51633	64.2
9	∞			

注：1. 像远比＝0.928；

2. 七十年代公开发表。

† r_8是非球面，非球面方程为：

$$x_8 = Ay^4 + By^6 + Cy^8 + Dy^{10}$$

A＝0.42281；

B＝28.22300；

C＝−238.46000；

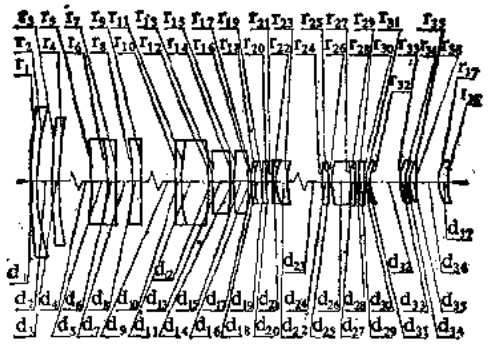
D＝−36.90400。

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-043

高变倍率变焦距物镜

E. F. L＝1～10　　B. F. L＝0.8　　FNo. ＝ 2　　F. A. ＝ ±30°～±3°



序　号	r	d	n	ν	序　号	r	d	n	ν
1	23.3330	0.33300	1.64050	60.10	20	3.9330	0.40000		
2	12.0000	0.72000			21	－19.1600	0.10000	1.56873	63.08
3	33.3330	0.33300	1.64050	60.10	22	2.4930	0.50000	1.80518	25.43
4	17.1330	3.46670			23	5.0260	＊＊＊3		
5	－20.6670	0.86700	1.80518	25.43	24	23.7330	0.40000	1.88900	49.48
6	－8.5330	0.33300	1.58904	53.01	25	－7.1930	0.00670		
7	∞	0.82000			26	3.9070	0.80000	1.69680	56.18
7	∞	0.82000			26	3.9070	0.80000	1.69680	56.18
8	－9.2000	0.33300	1.46450	65.77	27	－4.6670	0.13300	1.80518	25.43
9	－72.7880	＊＊＊1			28	17.7190	＊＊＊4		
10	∞	0.26700	1.80518	25.43	29	－13.8210†	0.23700	1.69680	56.18
11	8.6670	1.73300	1.69680	56.18	30	46.1361	0.13510		
12	－14.6670	0.00667			31	1.5005	0.19520	1.50137	56.41
13	46.8330	0.90000	1.69680	56.18	32	1.6853	1.99110		
14	－14.5330	0.00667			33	2.4208	0.13110	1.69680	56.18
15	10.0000	0.73300	1.64050	60.10	34	1.2148	0.09530		
16	33.6810	＊＊＊2			35	2.0232	0.24690	1.48606	81.49
17	5.1800	0.13300	1.72000	50.41	36	67.4082	1.14630		
18	3.1000	0.32000			37	1.2707	0.42410	1.48606	81.49
19	10.4130	0.13300	1.72000	50.41	38	5.3731			

注：1970年公开发表。

† r_{29}是非球面，非球面方程为：

$$x_{29} = -13.8110 + \sqrt{190.7437 - y^2} + A_2y^2 + A_4y^4 + A_6y^6 + A_8y^8 + A_{10}y^{10}$$

$A_2 = 0.39899250 \times 10^{-2}$；

$A_4 = -0.42625912 \times 10^{-3}$；

$A_6 = -0.63682097 \times 10^{-3}$；

$A_8 = -0.14074694 \times 10^{-2}$；

$A_{10} = 0.11075916 \times 10^{-2}$。

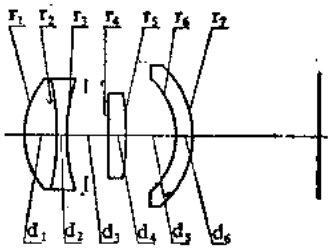
E. F. L	0.9995	5.9588	9.9057
＊＊＊1	3.0896	1.1900	0.4182
＊＊＊2	0.0706	5.9956	7.4780
＊＊＊3	7.6575	1.7324	0.2500
＊＊＊4	0.2755	2.2359	2.9467

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-044

广角的、总长短的照相物镜

E.F.L＝1　　B.F.L＝0.506　　FNo.＝5.6　　F.A.＝±31°



序　号	r	d	n	ν
1	0.2008	0.076	1.56257	46.3
2	−0.5814	0.017	1.83630	30.4
3	0.4384	0.097*		
4	2.7475	0.038	1.66680	33.0
5	−0.6844	0.123		
6	−0.1366	0.029	1.60311	60.7
7	−0.2199†			

注：七十年代公开发表。

† r_7是非球面，非球面方程为：

$$x_7=\frac{y^2}{r_7+r_7\sqrt{1-(y/r_7)^2}}+Ay^4+By^6+Cy^8+Dy^{10}$$

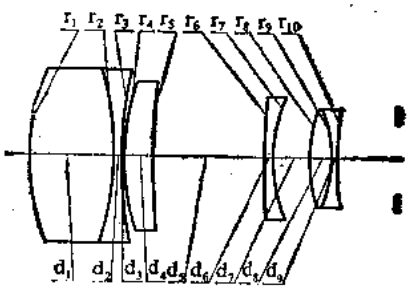
$A=3.489$；　$B=-1.056\times10^3$；　$C=4.635\times10^4$；　$D=-1.147\times10^6$。

编号：09-06-045

编号：09-06-045

小　型　无　焦　点　放　大　镜

E.F.L＝4.87　　B.F.L＝2.43　　FNo.＝　　F.A.＝±



序号	r	d	n	ν	序号	r	d	n	ν
1	0.4563	0.1692	1.58913	61.27	6	1.7624	0.0148	1.74400	44.77
2	−0.5814†	0.0205	1.68273	44.50	7	0.2473	0.0730		
3	0.7861	0.0053			8	0.2513	0.0423	1.60342	38.03
4	0.4530	0.0634	1.49782	66.95	9	−0.2166	0.0106	1.74400	44.77
5	1.7911	0.2309			10	0.6912			

注：1971年公开发表。

† r_2是非球面，非球面方程为：$x_2=\frac{c_2y^2}{1+\sqrt{1-c_2^2y^2}}+Ay^4+By^6$

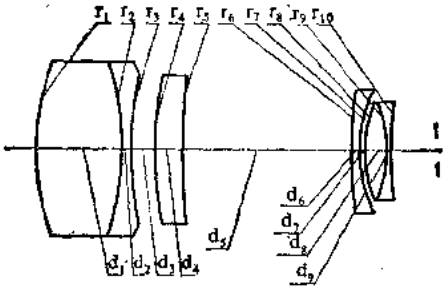
$A=2.449030$；　$B=-0.784120$；　$c_2=1/r_2$。

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-046

小型无焦点放大镜

E.F.L=265　　B.F.L=134.5　　FNo.=　　F.A.=±



序号	r	d	n	v	序号	r	d	n	v
1	0.4540	0.1713	1.58913	61.27	6	1.1744	0.0148	1.74400	44.77
2	−0.5531†	0.0184	1.68273	44.50	7	0.1978	0.0117		
3	0.6819	0.0630			8	0.1982	0.0444	1.60342	38.03
4	0.7533	0.0634	1.49782	66.95	9	−0.1865	0.0085	1.74400	44.77
5	3.6330	0.3594			10	1.0820			

注：1971年公开发表。

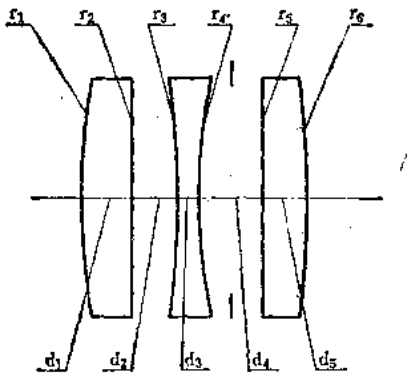
† r_2是非球面，非球面方程为：$x_2=\frac{c_2y^2}{1+\sqrt{1-c_2^2y^2}}+Ay^4+By^6$

$A=2.569212$；　$B=-1.017325$；　$c_2=1/r_2$。

编号：09-06-047

小型三组元照相物镜

E.F.L=0.93　　B.F.L=0.87　　FNo.=8.6　　F.A.=±20°**



序号	r	d	n	v	序号	r	d	n	v
1	0.1823	0.0163	1.678	55.2	4	0.1624†	0.0199		
2	∞	0.0137***			5	−2.5780	0.0142	1.615	51.2
3	−0.2585†	0.0065*	1.519	44.4	6	−0.2496			

注：1. 焦点调节时，d_2变化；　2. 1973年公开发表。

† r_3和r_4都是非球面，非球面方程分别为：

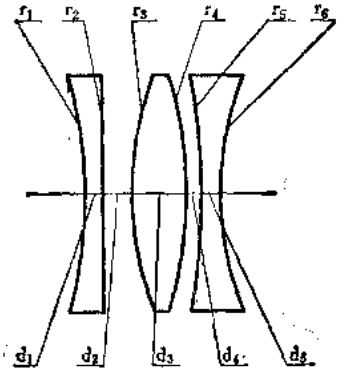
$x_3=\frac{c_3y^2}{1+\sqrt{1-c_3^2y^2}}+20.150y^4+766.4y^6\left(c_3=\frac{1}{r_3}\right)$；　$x_4=\frac{c_4y^2}{1+\sqrt{1-c_4y^2}}-20.833y^4+929.8y^6\left(c_4=\frac{1}{r_4}\right)$

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-048

小型三组元照相物镜

E.F.L=0.98　　B.F.L=0.93　　FNo.=8.6　　F.A.=±20°**



序　号	r	d	n	v
1	−0.2635	0.0080	1.519	44.4
2	−6.7715	0.0169***		
3	0.1890†	0.0329	1.678	55.2
4	−0.2386†	0.0071		
5	−0.5510	0.0080	1.519	44.4
6	0.1775			

注：1. 焦点调节时，d_2变化；2. 1973年公开发表。

† r_3和r_4都是非球面，非球面方程分别为：

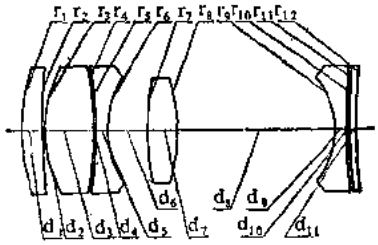
$$x_3=\frac{c_3y^2}{1+\sqrt{1-c_3^2y^2}}-29.705y^4\quad\left(c_3=\frac{1}{r_3}\right);\quad x_4=\frac{c_4^2y^2}{1+\sqrt{1-c_4^2y^2}}+24.084y^4\quad\left(c_4=\frac{1}{r_4}\right)$$

编号：09-06-049

编号：09-06-049

发射望远镜上的物镜

E.F.L=9.98　　B.F.L=−1.26　　FNo.=1.5　　F.A.=±



序号	r	d	n	v	序号	r	d	n	v
1	8.741†	1.089	1.4890	54.3	7	12.900	1.458	1.4890	54.3
2	50.810	0.010			8	−8.030	7.724		
3	6.204	2.468	1.4890	54.3	9	−3.141†	0.500	1.4890	54.3
4	−16.340	0.001			10	40.100	0.100		
5	−17.750	0.529	1.5917	30.8	11	40.000	0.300	1.5070	46.9
6	4.491†	1.849			12	32.300			

注：1. M=0.125*；2. 1975年公开发表。

† r_1是非球面，非球面方程为：

$$x_i=\frac{c_iy^2}{1+\sqrt{1-(k+1)c_i^2y^2}}+Ay^4+By^6+Cy^8+Dy^{10}\quad\left(i=1,\ 6,\ 9;\ c_i=\frac{1}{r_i}\right)$$

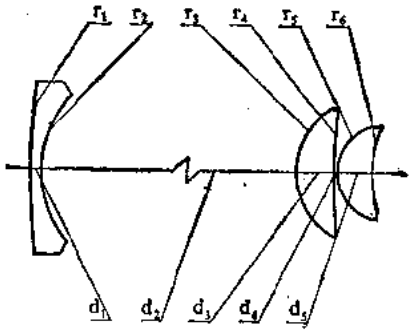
	c	k	A	B	C	D
r_1	0.11440	-0.57011×10^{0}	-0.39510×10^{-3}	-0.56167×10^{-6}	0.17766×10^{-6}	-0.19389×10^{-7}
r_6	0.22268	-0.12298×10^{-1}	-0.41923×10^{-3}	-0.16911×10^{-4}	-0.34771×10^{-5}	-0.19956×10^{-7}
r_9	0.31835	0.15979×10	0.31413×10^{-2}	0.67540×10^{-4}	0.24771×10^{-5}	0.10339×10^{-6}

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-050

短后截距大孔径光学系统

E. F. L＝0.039　　B. F. L＝0.152　　FNo. ＝1.25　　NA＝0.4



序　号	r	d	n	v
1	4.3250	0.040	1.49776	67.0
2	0.4435	6.270		
3	0.2744	0.120	1.49170	57.4
4	4.0000†	0.005		
5	0.1735	0.125	1.49170	57.4
6	0.4793			

注：1975年公开发表。

† r_4是非球面，非球面方程为：$x_4=\dfrac{k(H^2-x_0^2)+2(AH^4+BH^6)}{2(1-kx_0)}$　　$(H^2=y^2+z^2)$

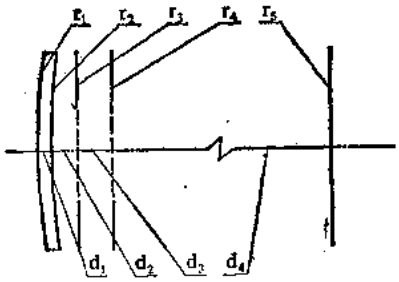
$x_0=4.00000$；　$k=-0.25000$；　$A=-0.95105\times10$；　$B=-0.22000\times10^3$。

编号：09-06-051

编号：09-06-051

风　景　透　镜

E. F. L＝1.011　　B. F. L＝－0.016　　FNo. ＝9　　F. A. ＝±26°



序　号	r	d	n	v
1	0.184	0.028	1.49	58
2	0.278†	0.056		
3	∞	0.068		
4	∞	0.353		
5	∞			

注：1. r_3是视场光栏半径；2. r_4是孔径光栏半径；3. r_6是胶片半径；4. 1975年公开发表。

† r_2是非球面，非球面方程为：

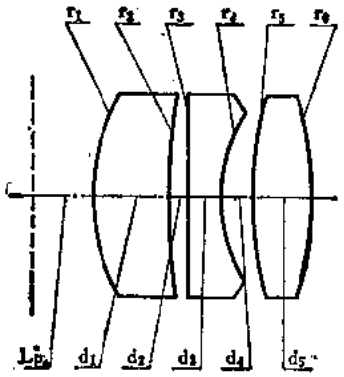
$$x_2=\frac{1}{2r_2}y^2+29.083y^4-44.969\times10^2y^6+38.080\times10^4y^8-10.991\times10^6y^{10}$$

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-052

三组元非球面物镜

E.F.L＝10.12　B.F.L＝6.93　FNo.＝1.33　F.A.＝±19.8°　$L^*_{p_0}$＝－1.8



序　号	r	d	n	v
1	6.0159	2.18	2.0194	34.21
2	20.6440†	0.55		
3	∞	1.00	2.0000	18.80
4	4.1152†	0.80		
5	11.1660	1.85	2.0194	34.21
6	－9.9168			

注：1975年公开发表。

† r_i是非球面，非球面方程为：

$$x_i=\frac{c_iy^2}{1+\sqrt{1-(1+k)c_i^2y^2}}+Ay^4$$

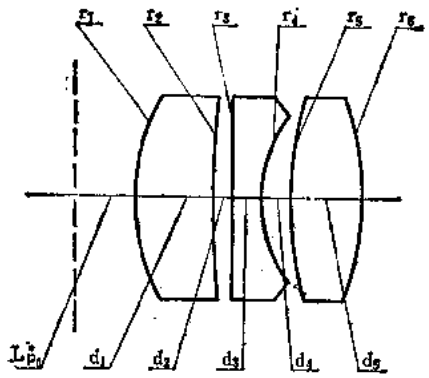
$$\left(i=2,\ 4;\ c_i=\frac{1}{r_i}\right)$$

	k	A
c_2	0	1.355×10^{-4}
c_4	－1.4	0

编号：09-06-053

三组元非球面物镜

E.F.L＝9　B.F.L＝6　FNo.＝1.2　F.A.＝±21.8°　$L^*_{p_0}$＝－1.8



序　号	r	d	n	v
1	6.0730	2.18	2.0194	34.21
2	29.0380†	0.60		
3	227.8300	0.80	2.0000	18.80
4	3.9421†	0.76		
5	11.5740	2.16	2.0194	34.21
6	－8.6043			

注：1975年公开发表。

† r_i是非球面，非球面方程为：

$$x_i=\frac{c_iy^2}{1+\sqrt{1-(1+k)c_i^2y^2}}+Ay^4+By^6$$

$$\left(i=2,\ 4;\ c_i=\frac{1}{r_i}\right)$$

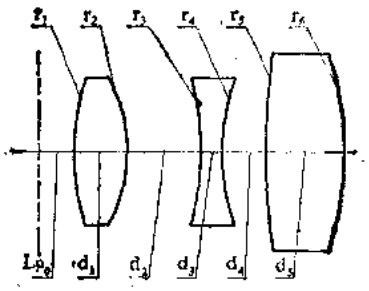
	k	A	B
c_2	59.45	1.5317×10^{-4}	0.8334×10^{-6}
c_4	－1.1184	-1.0557×10^{-4}	-2.2321×10^{-6}

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-054

三组元非球面物镜

E.F.L=25　B.F.L=19.99　FNo.=4　F.A.=±23.11°　$L^*_{p0}=-1.5$



序号	r	d	n	v
1	9.4442	2.10	1.49168	57.4
2	-60.4820	3.10		
3	-11.1063†	1.00	1.59028	30.9
4	8.7796†	1.81		
5	29.4910	3.20	1.73400	51.0
6	-11.8780			

注：1975年公开发表。

† r_i是非球面，非球面方程为：

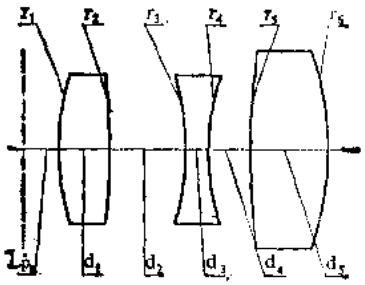
$$x_i=\frac{c_iy^2}{1+\sqrt{1-(1+k)c_i^2y^2}}\qquad\left(i=3,\ 4;\ c_i=\frac{1}{r_i}\right)$$

	c	k
x_3	-0.0900386	2.317611
x_4	0.1139004	-1.869075

编号：09-06-055

三组元非球面物镜

E.F.L=25.76　B.F.L=20.97　FNo.=4　F.A.=±22.52°　$L^*_{p0}=-1.5$



序号	r	d	n	v
1	10.0530	2.10	1.49168	57.4
2	-62.2250	3.29		
3	-10.9410†	1.00	1.59028	30.9
4	9.2854†	1.79		
5	31.6680	3.26	1.73400	51.0
6	-11.6630			

注：1975年公开发表。

† r_i是非球面，非球面方程为：

$$x_i=\frac{c_iy^2}{1+\sqrt{1-(1+k)c_i^2y^2}}\qquad\left(i=3,\ 4;\ c_i=\frac{1}{r_i}\right)$$

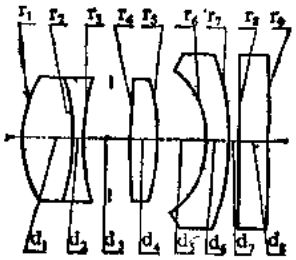
	c	k
x_3	-0.0913993	1.946468
x_4	0.1076960	-1.988948

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-056

总长短的广角物镜

E.F.L＝1　　B.F.L＝0.447　　FNo.＝4.5　　F.A.＝±32°



序号	r	d	n	ν
1	0.23341	0.1013	1.62280	57.1
2	−0.37997	0.0203	1.83400	37.2
3	0.43926	0.0948*		
4	2.27030	0.0492	1.66672	48.3
5	−0.42573	0.1008		
6	−0.17875	0.0434	1.51633	64.2
7	−0.54311	0.0145		
8	∞	0.0579	1.51633	64.2
9	∞†			

注：1. 望远比＝0.931；2. 1977年公开发表。

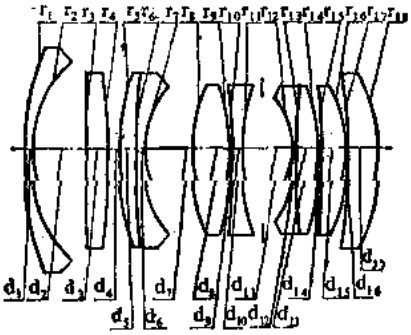
† r_9是非球面，非球面方程为：$x_9 = Ay^4 + By^6 + Cy^8 + Dy^{10}$

$A = 0.02833$；$B = -21.00700$；$C = 105.56000$；$D = 22.66900$。

编号：09-06-057

使用非球面的小型大孔径广角物镜

E.F.L＝24.5　　B.F.L＝36.5　　FNo.＝1.4　　F.A.＝±42°



序号	r	d	n	ν	序号	r	d	n	ν
1	50.193	1.500	1.58913	61.10	10	−117.870	1.500	1.58921	41.10
2	22.569	11.000			11	35.370	10.681*		
3	428.240	4.000	1.58913	61.10	12	−15.854	1.000	1.80518	25.40
4	−102.530	2.000			13	99.094	4.500	1.77250	49.60
5	44.584	3.000	1.80518	25.40	14	−33.487†	0.150		
6	152.276	1.500	1.58913	61.10	15	−133.553	5.000	1.77250	49.60
7	18.288	10.437			16	−25.530	0.150		
8	28.795	7.000	1.71300	54.00	17	−79.919	6.000	1.77250	49.60
9	−39.264	0.200			18	−27.816			

注：1980年公开发表。

† r_{14}是非球面，非球面方程为：

$$x_{14} = \frac{y^2}{r_{14} + r_{14}\sqrt{1 - (y/r_{14})^2}} + Ay^4 + By^6 + Cy^8 + Dy^{10}$$

$A = 0.20647 \times 10^{-4}$，$B = 0.36845 \times 10^{-7}$，$C = -0.80225 \times 10^{-10}$，$D = 0.52622 \times 10^{-13}$。

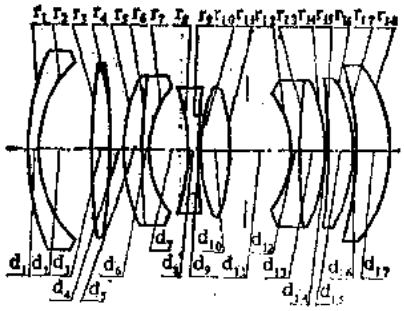
y	x	y	x
0	0	8.575	0.99244
1.225	0.02237	9.800	1.24937
2.450	0.08899	11.025	1.51179
3.675	0.19841	12.250	1.76822
4.900	0.34804	13.475	2.00625
6.125	0.53406	14.700	2.21315
7.350	0.76115		

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-058

使用非球面的小型大孔径广角物镜

E.F.L=24.6　　B.F.L=36.5　　FNo.=1.4　　F.A.=±42°



序　号	r	d	n	ν
1	51.339	1.500	1.58913	61.1
2	23.989	10.500		
3	146.244	4.000	1.58913	61.1
4	−123.350	2.000		
5	36.242	3.000	1.80518	25.4
6	179.177	1.500	1.58913	61.1
7	16.966	8.297		
8	−37.872	1.500	1.59270	35.6
9	102.608	0.200		
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10	31.802	5.500	1.71300	54.0
11	−39.227	11.972*		
12	−15.730	1.000	1.80518	25.4
13	131.434	5.742	1.77250	49.6
14	−34.176†	0.150		
15	−159.831	6.000	1.77250	49.6
16	−25.585	0.150		
17	−60.981	5.500	1.77250	49.6
18	−27.134			

注：1980年公开发表。

† r_{14}是非球面，非球面方程为：

$$x_{14}=\frac{y^2}{r_{14}+r_{14}\sqrt{1-(y/r_{14})^2}}+Ay^4+By^6+Cy^8+Dy^{10}$$

$A=0.21699\times10^{-4}$；$B=0.35319\times10^{-7}$；$C=-0.92699\times10^{-10}$；$D=0.61850\times10^{-13}$。

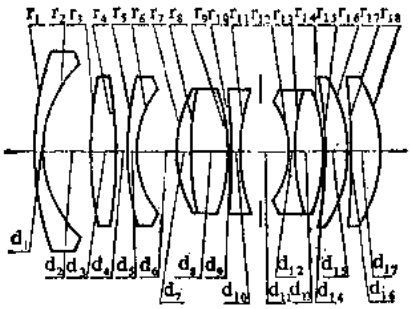
y	x	y	x
0	0	8.575	0.96445
1.225	0.02191	9.800	1.21115
2.450	0.08714	11.025	1.46170
3.675	0.19412	12.250	1.76517
4.900	0.34012	13.475	1.93029
6.125	0.52111	14.700	2.12630
7.350	0.73157		

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-059

使用非球面的小型大孔径广角物镜

E.F.L＝24.5　　B.F.L＝36.5　　FNo.＝1.4　　F.A.＝±42°



序　号	r	d	n	ν
1	58.377	1.500	1.58913	61.1
2	22.505	10.000		
3	85.255	4.500	1.58913	61.1
4	−101.797	2.000		
5	61.083	1.500	1.58913	61.1
6	19.598	8.139		
7	26.570	3.000	1.80518	25.4
8	62.807	7.960	1.58913	61.1
9	−36.357	0.200		
10	−177.303	1.500	1.60562	43.7
11	36.089	9.669*		
12	−14.680	1.000	1.80518	25.4
13	43.066	5.500	1.77250	49.6
14	−34.315†	0.150		
15	−86.111	4.500	1.77250	49.6
16	−27.367	0.150		
17	−288.678	6.000	1.77250	49.6
18	−27.467			

注：1980年公开发表

† r_{14}是非球面，非球面方程为：

$$x_{14}=\frac{y^2}{r_{14}+r_{14}\sqrt{1-(y/r_{14})^2}}+Ay^4+By^6+Cy^8+Dy^{10}$$

$A=0.18703\times10^{-4}$，$B=0.33568\times10^{-7}$，$C=-0.46676\times10^{-10}$，$D=0.23254\times10^{-13}$。

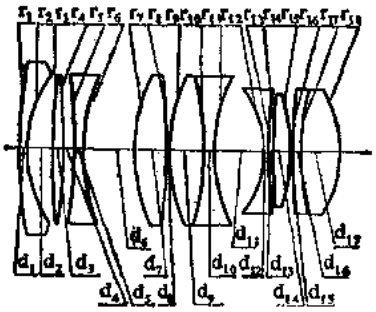
y	x	y	x
0	0	8.575	0.97552
1.225	0.02183	9.800	1.23068
2.450	0.08689	11.025	1.49228
3.675	0.19386	12.250	1.74832
4.900	0.34042	13.475	1.98497
6.125	0.52305	14.700	2.18683
7.350	0.73691		

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com

编号：09-06-060

使用非球面的大孔径广角物镜

E.F.L=35.6　　B.F.L=37.0　　FNo.=1.22　　F.A.=±32°



序　号	r	d	n	ν
1	127.758	2.00	1.51633	64.1
2	32.456	7.27		
3	226.790	4.17	1.69350	53.3
4	−143.047	3.07		
5	−129.485	2.00	1.55963	61.2
5	−129.485	2.00	1.55963	61.2
6	48.855	14.49		
7	46.713	9.07	1.79952	42.2
8	−162.428	0.20		
9	47.104	9.46	1.77250	49.7
10	−73.084	2.02	1.68893	31.1
11	42.886	13.46		
12	−25.863	1.50	1.75520	27.5
13	116.941	1.62		
14	1751.328	4.50	1.77250	49.7
15	−48.848†	0.20		
16	176.323	1.72	1.80518	25.4
17	68.803	10.83	1.77250	49.7
18	−31.222			

注：1983年公开发表。

† r_{15}是非球面，非球面方程为：

$$x_{15}=\frac{y^2}{r_{15}+r_{15}\sqrt{1-(Y/r_{15})^2}}+Ay^4+By^6+Cy^8+Dy^{10}$$

$A=1.05836\times10^{-5}$；

$B=1.05001\times10^{-8}$；

$C=1.82850\times10^{-11}$；

$D=-3.48000\times10^{-18}$。

PDF 文件以 "PDF 制作工厂" 试用版创建　http://www.fineprint.com